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DEC 21 1931
DETROIT

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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Rockne Sales Outlets Show Rapid Increase; Graham Sees 1,500 by Feb.

Calls Attention to Contribution to Relief of Unemployed Through Activities of New Corporation

DETROIT, Dec. 18.—George M. Graham, vice-president in charge of sales for the Rockne Motors Corporation, called attention here today to the contribution to the relief of unemployment throughout the country which this new company is making. As a result of the Rockne activities thousands of new jobs in production and sales divisions have been created. Obviously these jobs are growing where there were no jobs before, since the company is a brand new industrial organization.

Mr. Graham called attention to the fact that 500 Rockne dealers have already been appointed. Franchises have been signed for Chicago, Cleveland, Pittsburgh, Omaha, St. Louis, Oklahoma City, Cheyenne, Los Angeles, San Francisco, Seattle, Tacoma, San Diego, Shreveport, Mobile, New Orleans, Clarksburg, Baton Rouge, Nashville, Jackson, Baltimore, Fort Wayne, Columbus, Tulsa, Richmond and many other representative American cities. A large and competent force of field representatives is now busy developing dealers everywhere. Names of dealers already appointed will be announced within a fortnight.

"We expect to have 1,500 Rockne

(Continued on Page 6)

100 DE SOTO FIELD REPRESENTATIVES AT DETROIT SESSION

Detroit, Dec. 18.—More than 100 field representatives of the De Soto Motor Car Corporation are assembled here in a meeting that will last two days. They are being told all about the big things De Soto is planning for 1932. Engineers will show them the new cars, they will ride in them and after completing their education in this line they will sit in on several business sessions.

Executives of the company, including President Byron Foy, Chief Engineer Fred Zeder, General Sales Manager Roy Peed, Assistant General Sales Manager R. M. Rowland and Advertising Manager Ray Blackwell are on the card to talk to the field men. Tonight there will be a banquet at the Statler.

TRUCK INTERESTS MAP OPPOSITION TO TAX INCREASE

Washington, Dec. 18.—Plans for a national campaign against interstate taxation of trucks and buses, as proposed by President Hoover in his message to Congress, were laid last night at a mass meeting held by the motor transportation interests of Washington in the United States Chamber of Commerce Building.

It was decided to invite all interested national and state organizations to confer here as to the procedure to combat the proposal and to form a group to appear before Congress.

Edward F. Loomis, secretary of the Motor Truck Committee of the National Automobile Chamber of Commerce, told the meeting that an interstate tax would be only an entering wedge for taxation of all trucks and buses. He pointed out that less than 2 per cent. of the 3,500,000 trucks in the United States are competing directly with the railroads as common carriers.

A. H. Bishop, president of the Maryland State Automobile Trade Association, told of the situation in Maryland in regard to District of Columbia trucks operating in the state. He said a Maryland law places operation of all trucks on regular routes under the control of the Public Service Commission and imposes a tax of ½ cent for each ten miles on vehicles. The Public Service Commission, he declared, is

(Continued on Page 6)

Banjo Frame Design, Outboard Springs, New Type Fenders Feature New Graham Blue Streak Line

Increased Power, Riding Comfort, Better Steering And Many Other Changes Have Been Incorporated

Detroit, Dec. 18.—The Graham-Paige Motors Corporation took the wraps off its new "Blue Streak" line today and disclosed a vehicle embodying many interesting features of design and construction. The chassis has a wheelbase of 123 inches and an eight cylinder, aluminum head engine, developing ninety horsepower.

Among the features to be noted in this new Graham line is a new treatment of line and contour, including radiator and hood and a complete concealment of chassis and running gear, only the wheels being visible through the novel type fenders. A new type of banjo frame has been devised, with the rear axle extending through instead of under the straight side channels. This eliminates the high kick-up of the conventional double-drop frame. Outboard springs are employed, front and rear, the chassis frame being dropped low and cradled between the springs instead of riding above them. Increased stability is claimed because of reduced side sway and frame weave. Improved steering holds the car to the straight course ahead and automatically straightens it after a turn.

Other new features in design, construction and equipment to be found on this latest member of the Graham family are as follows:

Dash-regulated shock absorbers, dash-controlled free wheeling in all forward speeds, hydraulic brakes with centrifuse drums, a new product of Motor Wheel; silenced chassis and body, cool gas fuel system, resonator type exhaust silencer, dual valve springs and syncro-mesh gear-shift transmission, in which both gear shifting and driving are silent in second and third gears.

The Blue Streak eight-cylinder engine is of the L-head type, with a bore and stroke of 3⅛ by 4 inches, giving it a piston displacement of 245.4 cubic inches. This is the same size power plant that was formerly used, but it is stated that horsepower, now listed at 90 at 3,400 revo-

(Continued on Page 7)

NEW GRAHAM PRICES RANGE $945 TO $1,170

Detroit, Dec. 18.—Prices on the new Graham models have been announced as follows:

STANDARD MODELS

Business Coupe	$995
Rumble Seat Coupe	1,045
4-Door 6-Window Sedan	1,045

DE LUXE MODELS

Coupe	$1,070
Rumble Seat Coupe	1,120
Convertible Coupe	1,170
4-Door 6-Window Sedan	1,120

(De luxe models include colored fenders, four white side wall tires, pillow type upholstery, form fitting comfort type springs, genuine curled hair upholstery pads, smoking set with cigar lighter, two rubber covered foot pillows, rubber padded pocker type arm rests, chromium windshield and wiper fittings and other interior body refinements.)

Both the standard and the de luxe models may be obtained with special equipment consisting of two spare wheels side mounted in fender wells, metal wheel and tire covers and trunk rack. Natural wood wheels are $10 extra list for five and $12 for six on any model. Safety plate glass throughout is $25 extra list on sedans, $17.50 on other models.

POTENTIAL 309,600 NEW CAR MARKET SEEN IN N. Y. AREA

New York, Dec. 18.—Prospects for next year's sales of new automobiles in the New York metropolitan area are better than at any time during the last few years, according to the heads of 150 Hudson and Essex selling organizations from this territory meeting here today for a private preview of new 1932 models which will be announced January 9 and which were reported to establish new records for the number of advanced features.

Because of light buying during the last two years dealers reported that thousands of replacements

(Continued on Page 6)

E. G. BUDD MFG. CO. TO ALMOST DOUBLE PAYROLL IN JANUARY

Philadelphia, Pa., Dec. 18.—The pay roll of the Edward G. Budd Manufacturing Company in January will total approximately $800,000, as against an expenditure of $429,000 for the corresponding period of 1931, according to estimates made following a meeting of the company's directors yesterday.

These figures reflect the large volume of business on the company's books and scheduled for delivery in January. The increase in the pay roll is considered by the Budd Company to be a tangible indication of the confidence of the automobile industry in 1932.

TARIFF REVISION WOULD AID TRADE, SAYS N. A. C. C. CHIEF

New York, Dec. 18.—"Give people of foreign countries an opportunity to exchange their products in payment for purchases from the United States, and you will restore work opportunity for American labor," George F. Bauer, export manager of the National Automobile Chamber of Commerce, declared Thursday.

"Gold," in his opinion, "was not meant to serve as a medium of actual payment, but rather as a sym-

(Continued on Page 6)

Willys-Overland Driveaway Sets New Two-Year Record

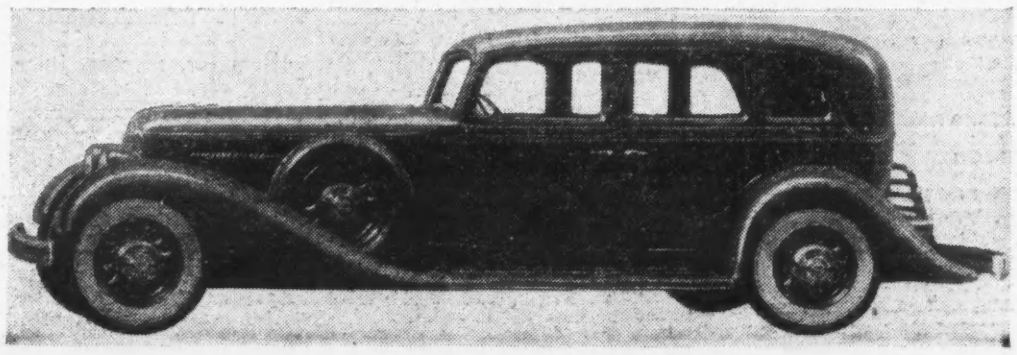
Toledo, O., Dec. 18.—The largest driveway of cars from the Willys-Overland factory in the past two years occurred late yesterday when dealers from points in Kansas, New York, Pennsylvania, Illinois, Michigan, Indiana, Ohio and Missouri took delivery of nearly 500 new cars, representing a value of more than $750,000.

Prior to the driveaway an all day meeting was held in the huge auditorium in the administration building which was attended by nearly seven hundred Willys-Overland dealers, salesmen and retail sales managers.

The address of welcome was delivered by H. B. Harper, vice-president in charge of sales with N.

(Continued on Page 8)

Graham Blue Streak 4-Door Sedan De Luxe



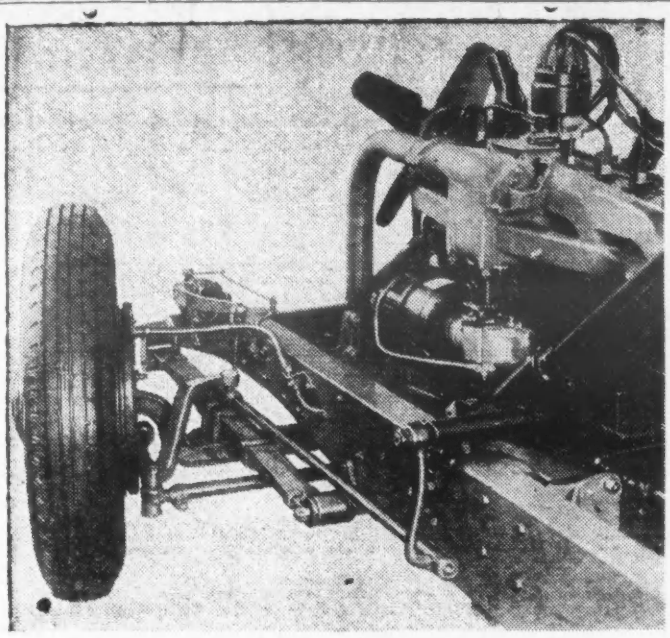
Motor Wheel Introduces Centrifuse Brake Drum

Lansing, Mich., Dec. 18.—Motor Wheel Corporation today announced a new brake drum, called "Centrifuse," and it is claimed that it will give more than five times longer service and maintain the brakes at their highest efficiency over a correspondingly longer period. At the New York show several leading makes of cars will show the "Centrifuse" brake drum as standard equipment.

New construction gives the "Centrifuse" drum the structural strength of steel, a lightness comparing favorably to that of the pressed-steel drum, and the advantages which cast iron affords as brake-drum material.

The "Centrifuse" is a composite

(Continued on Page 10)



THE STEERING GEAR in the new Graham eight is mounted on top of the side rail rather than through it, as in past practice. The draglink is above the spring and protected from injury from below. Front springs are shackled at the front end, and the outboard mounting of the springs, while reducing the frame kick-up over the front axle, gives normal clearance and actually makes the front springs eight inches farther apart

BUDD WHEEL DECLARES DIVIDEND ON PREFERRED

New York, Dec. 18.—At the meeting of the board of directors of the Budd Wheel Company held here yesterday, the regular quarterly dividend of 1¾ per cent., with an extra dividend of three-quarters of 1 per cent. per share, was declared on the 7 per cent. first preferred stock of the company, payable December 31 to holders of record at the close of business on December 28, 1931.

The board decided against the payment of the common dividend for the fourth quarter in view of the fact that substantial dividend payments have already been made during the past year, amounting to 75 cents per share on the common stock, and in order to maintain a strong working capital position.

QUEBEC BOOSTS GAS TAX; MAY TAX TRUCKERS

Montreal, Dec. 18.—The Quebec provincial government yesterday raised the gasoline tax rate from five to six cents a gallon. It is estimated that the increase will yield an additional annual revenue of $2,000,000.

Taxation of trucks doing business along provincial highways and carrying merchandise in competition with railways also is contemplated.

BESIDES passenger cars, Willys-Overland offers a complete line of trucks and truck bodies for every business and agricultural need. Dealers find added profit possibilities in this up-to-date commercial line.

Write or wire for 1932 particulars of this profit-building franchise

WILLYS-OVERLAND, INC.
TOLEDO, OHIO
Willys-Overland, Ltd., Toronto, Canada

WILLYS-OVERLAND SIXES AND EIGHTS
WILLYS-KNIGHTS
WILLYS-OVERLAND SIX TRUCKS

BUDD COMPLETES NEW YORK SHOW EXHIBIT PLANS

Philadelphia, Dec. 18.—Plans have been completed by the Edward G.Budd Manufacturing Company for an unusually comprehensive exhibit of its products at this year's New York Automobile Show, according to an announcement made yesterday by company officials. Three all-steel bodies will be shown. One body will be suspended from a scale mounted on a tripod to indicate the light weight of the all-steel body.

Another body will be completely painted and trimmed in a luxurious fashion, indicating the manner in which this type body may be accorded the finest custom body treatment. The third body will have small sections cut out at vital points to permit inspection. The interior of the cut-out sections will be painted red against a background of the black body.

In addition, the company has planned to install a small testing machine in its booth and there demonstrate the strength of flash welding. Another part of the exhibit will show a section of a stainless steel, electrically welded airplane, and a further addition to the exhibits will be a demonstration of sound deadening.

The Budd exhibit is expected to attract the interest not only of the motoring public, but of the technical men and engineers of the industry. Budd officials have planned to have their engineers and technical men present at the booth at all times to explain details of the all-steel body and to confer on technical matters pertaining to body construction or related phases of the industry.

R. A. LYDY REPORTS UPTREND IN EUROPE

Toledo, Dec. 18.—R. A. Lydy, formerly of Toledo and now the European manager of the Champion Spark Plug Company's London and Paris offices, is visiting the Toledo factory for a brief stay. With him is L. Marocchi, special factory equipment engineer of the Champion company to the European countries.

Mr. Lydy, in commenting on business conditions in the European countries in general, states:

"Business in most European countries is now showing evidence of an upward trend from the calm that has reigned in general for the past two years. England is steadily recovering. Its mills are running and unemployment is decreasing. Improvement in the industrial activities of that country is certain to reflect favorably in the automotive business. Our business has held its own in a very gratifying manner, and we look forward to further improvement."

J. R. HARLAN NAMES WIGGINS VICE-PRESIDENT

Cincinnati, Dec. 18.—The Jesse R. Harlan Company, advertising agency, announces the acquisition of J. Lawson Wiggins as vice-president in charge of marketing.

J. L. Wiggins

Mr. Wiggins was formerly connected with the Aluminum Industries, Inc., of Cincinnati as advertising and sales promotion manager for nine years.

For the past year Mr. Wiggins served as special field representative for an automotive wholesaling publication.

The Jesse R. Harlan Company specializes in the automotive and industrial fields.

BRAKE LINING GROUP ELECTS NEW OFFICERS

New York, Dec. 18.—The annual meeting of the Asbestos Brake Lining Association was held in Atlantic City, N. J. during week of the N. S. P. A. and M. & E. A. convention. New officers were elected for the year 1932 as follows:

William Brookes, Ferodo & Asbestos, Inc., president; F. R. Lee, Thermoid Rubber Company, first vice-president; D. L. Taylor, the Russell Manufacturing Company, second vice-president; and W. J. Parker, commissioner of the association.

Of recent date the association has entered into a contract with the Credit Clearing House Adjustment Corporation under which all members will avail themselves of the facilities of this organization for the purpose of obtaining uniform credit information and collections. The next regular meeting of the Asbestos Brake Lining Association will be held, Wednesday, January 13, 1932, at the New York Athletic Club, New York city.

SPARKS from DETROIT

Cadillac Curtain Raiser
* * *
Pre-Show Activity
* * *
At the Rockne Plant
* * *
Batteries Come Bigger
* * *

Chris Sinsabaugh—Detroit Editor

AS A CURTAIN RAISER to the two-day distributor-dealer meeting, which wound up Friday, Cadillac executives staged a preview of the new line for the benefit of the Paul Pry Association, made up of newspaper men whose duty it is to chronicle automobile activities.

President Lawrence P. Fisher, General Sales Manager John Chick, Chief Engineer E. W. Seaholm, Advertising Manager Trueman Campbell—all were there in the flesh to do the honors of the occasion. It was a tantalizing affair, notwithstanding. We were taken behind the scenes and shown the new stuff. There must have been at least seventy different models in the big auditorium. Some one estimated that the retail value of the display was at least $300,000. Engineers told us all about the four new lines—the sixteen, twelve and eight Cadillac and the La Salle—and then they flashed the red light on us. It was like looking at a beautiful garden and then having the "Don't Pick" sign pointed out to us. We could look all we wanted to at the Cadillacs and the La Salles, but at the present time we cannot tell our public what we saw.

* * *

IT WAS WITH JUSTIFIABLE PRIDE that President Fisher told us of the great effort Cadillac has put forth on its new models. Why, at least six million dollars has been spent on their development! The stupendous job that was tackled can best be appreciated when it is known that where the average factory only has one line to worry about, Cadillac has four. And it wasn't a case of dolling up old models, either. It is doubtful if ever before in Cadillac history that so many changes and improvements have been made in a new line.

To have to keep one's mouth closed is a punishment for an alleged critic who delights in pointing out the high lights of an automobile. The only leeway I have is to tell you I had a ride in one of the new jobs, and now I know how it feels to be a man of means.

* * *

PRE-SHOW ACTIVITY in the industry in and about Detroit promises great things when Sam Miles lets us through the doors of Grand Central Palace. Everyone seems to be busy. Those whose announcements are already out are polishing the rough spots off their programs, perfecting the details of their presentations the week of January 9, while those who still have to debut are nervously flecking imaginary dust off what seems to be well formulated plans.

* * *

AT THE ROCKNE PLANT one finds George Graham, vice-president of sales, and Frank Wiethoff, his general sales manager, preparing for special exhibits of the 75 which will be made in several of the major cities, prior to the national shows.

It is but natural that Graham should point to the way he has built up his distribution. It sounds astonishing, but the fact remains that this latest addition to the industry has already signed more than 500 dealers, who have contracted for a total dealer net worth of $25,876,397, an average of $50,000 per dealer. By January 1 it is estimated that there will be at least 1,000 dealers on the Rockne list.

* * *

JUST TO GIVE YOU an idea of how well prepared Cadillac and La Salle are to meet the whims and fancies of its customers, it is stated that it is possible to build 45,000 cars, none of which will be exactly alike in the way of bodies.

* * *

IT IS NOT BETRAYING any state secret to tell you I have seen a 25-plate 190-ampere battery, said to be the largest ever put out for automobile use. Which causes us to remark that the modern battery has to work for a living. In the old days all it had to do was to furnish ignition power. Now it has to provide lights, sound the horn, operate the self-starter, give us juice for the cigar lighters, the dash lights, etc. If we ever have to add light housekeeping to our automobile comforts, what will the battery makers do?

Launch Novel System of Package Delivery

Packages Handled by Retail Stores Delivery Co. In Boston Relieves Necessity of Maintaining Truck Fleets

USING a fleet of forty General Motors trucks, a novel system of package delivery for retail stores has just been launched in Boston by the Retail Stores Delivery Company, a division of Stone's Express, Inc. Through this system retail stores are relieved of the necessity of maintaining trucks for delivery, merely turning packages for home delivery over to the delivery company, which sorts them and assumes responsibility for prompt delivery to the customer.

Packages are picked up from the stores or their warehouses, taken to a main sorting station where they are grouped in bins, one or more of which is assigned to a given route. All pick-ups are made during the afternoon and as late as 2 a. m. Deliveries are then made by a fleet of trucks which are loaded by the drivers and their helpers from the sorting station bins.

The delivery fleet consists of forty Model T-19C General Motors trucks equipped with delivery bodies completely enclosing the loaded packages. These trucks have two rear doors with glass windows, which are operated from the inside. Trucks are loaded from the rear and unloaded from the front by means of two collapsible doors. Both the front and rear doors are electrically operated, and are closed when the driver and helper are at customers doors.

For sorting the packages a most efficient system has been developed. The sorting station, steam heated, is a one-story brick building, 120 feet long and 300 feet wide, entirely covered by a roof. The central sorting room is 32 feet wide and 267 feet long, equipped with a Lamson variable speed carrier belt 30 inches wide and 267 feet long. On both sides of the belt are twenty sorting sheet metal troughs and twenty sorting sheet metal bins divided into three horizontal sections. At the top of each bin the name of the town and route is located. Adjacent to the walls of the sorting room on each side is a saw tooth metal platform, each accommodating twenty-two trucks. This platform is two feet high and is on the same level as the floor of the sorting room. At the front of the building are located the offices, chauffeurs' room, two returned goods rooms and two cashiers' rooms. In the middle of the front end of the building is located the receiving driveway for three trucks. The receiving platform is within the sorting room at the head of the belt. Three overhead sliding doors are opened only when the packages are received. At the head of the belt, within the sorting room, is ample space for receiving packages and sheet metal hampers from the stores.

Packages received at the head of the belt are placed on it and carried by the moving belt through the sorting room, from which they are taken and placed in the proper bins.

Each store using the system is under contract for a definite period of five years, thus eliminating their own sorting and personnel burden and enjoys a lower unit delivery cost per package than is possible if operating their own system.

Salesmen Pass These Out

ONE OF THE CIRCULARS used by Livermore & Traendly salesmen in factory gate campaign

Salesmen at Factory Gates Contact Used Car Prospects

SELLING USED CARS at factory gates during the noon hour has been successful for Livermore-Traendly, Inc., Chevrolet dealer of Albany, N. Y.

To interest the factory prospect in a used car, this concern uses two innovations in used car selling.

First, the distribution of hand bills or description folders could not be trusted to boys, so the dealer sent salesmen to the factory gates to hand them out to the workers as they left for lunch.

Secondly, the salesmen stayed in front of the gates during the noon hour, ready to discuss used car merits, arrange for demonstrations or to show prospects how they could finance a used car.

The folders used by Livermore-Traendly are somewhat different from the usual run. One, printed on yellow stock, contains a question mark and "Reductions and How!" Nothing else. The idea is to get the prospect to open the folder, where he is greeted with the statement, "Automobile Prices That Demand Action!" The prospect is invited to investigate price, payment plan, guarantee, assortment and why the dealership averages 1,000 used car sales a year. Then follows a list of cars priced from $66.66 to $566.66.

Another circular used by this concern is in the form of a timetable with the model and year followed by the "was" price, "now" price, down payment and monthly installment. Cars priced at $65 or lower are sold only for cash.

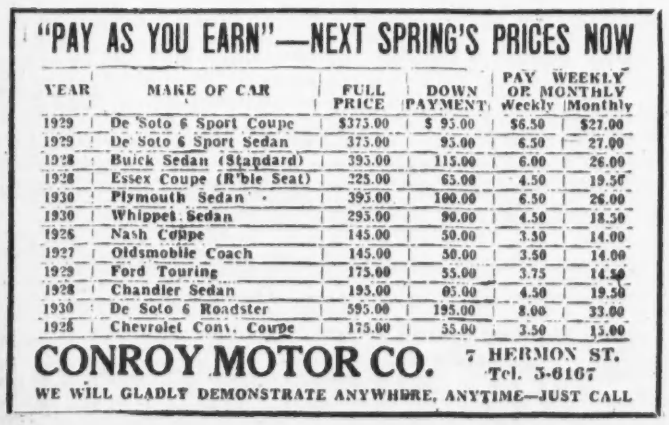
Livermore - Traendly hold sales frequently, but only over two-week periods.

Discussing sales at factory gates, Mr. Traendly says that the success has been marked. Four or five salesmen with demonstrators are used daily, while a similar number are on the new and used car floors. These salesmen alternate, and the men on factory duty devote the rest of the day to following up regular leads, as well as contacting the prospects discovered at the plants.

"We have increased our used car sales nearly 40 per cent. since we started factory gate contacting, and, as the man at work is the logical car buyer, we find it better than door-to-door contacts, where the man of the house might be out of a job."

This concern does considerable newspaper advertising and direct-by-mail, in addition to circular and folder advertising.

Uses Catchy Ad Copy


"PAY AS YOU EARN"—NEXT SPRING'S PRICES NOW
YEAR | MAKE OF CAR | FULL PRICE | DOWN PAYMENT | PAY WEEKLY OR MONTHLY Weekly | Monthly
1929 | De Soto 6 Sport Coupe | $375.00 | $ 95.00 | $6.50 | $27.00
1929 | De Soto 6 Sport Sedan | 375.00 | 95.00 | 6.50 | 27.00
1928 | Buick Sedan (Standard) | 395.00 | 115.00 | 6.00 | 26.00
1928 | Essex Coupe (R'ble Seat) | 225.00 | 65.00 | 4.50 | 19.50
1930 | Plymouth Sedan | 395.00 | 100.00 | 6.50 | 26.00
1930 | Whippet Sedan | 295.00 | 90.00 | 4.50 | 18.50
1926 | Nash Coupe | 145.00 | 50.00 | 3.50 | 14.00
1927 | Oldsmobile Coach | 145.00 | 50.00 | 3.50 | 14.00
1929 | Ford Touring | 175.00 | 55.00 | 3.75 | 14.50
1928 | Chandler Sedan | 195.00 | 65.00 | 4.50 | 19.50
1930 | De Soto 6 Roadster | 395.00 | 125.00 | 8.00 | 33.00
1926 | Chevrolet Conv. Coupe | 175.00 | 55.00 | 3.50 | 15.00
CONROY MOTOR CO. 7 HERMON ST. Tel. 5-6167
WE WILL GLADLY DEMONSTRATE ANYWHERE, ANYTIME—JUST CALL

"PAY as you earn; next spring's prices now," says the Conroy Motor Company of Worcester, Mass., in its used-car advertising. There is no fear of any mistakes in full price, down payment or weekly or monthly installments, as will be seen above

A. T. HANSORD NAMES R. A. WILSON MANAGER

Minneapolis, Minn., Dec. 18.—A. T. Hansord, president of A. T. Hansord Company, 44 South Twelfth St., Dodge-Plymouth distributor, has announced the appointment of R. A. Wilson as sales manager, succeeding H. L. Dyer, who has resigned.

CHRYSLER, DODGE, DE SOTO TO OPEN PLANTS IN ENGLAND

Toronto, Canada, Dec. 18.—The London, England, bureau of the Toronto Telegram, newspaper, in this city, advises by cable that three well-known American motor manufacturers have decided to manufacture in England.

They are Chrysler, Dodge and De Soto. Chrysler already has a subsidiary in London, with a plant at Kew, where cars are assembled and fitted with English bodies and accessories. Additional plants will now be erected, employing British material and labor, with a view to manufacturing a totally British product.

PACKARD OPENS BRANCH IN HUDSON COUNTY, N. J.

Union City, N. J., Dec. 18.—The F. M. Mitchell Motor Car Company, Packard dealership, at 4280 Boulevard, Union City, has been reorganized and will continue in business as a branch of the Packard Motor Car Company of New York, a part of the national Packard organization. John R. Chadwick, manager of the northern New Jersey territory, will be in charge.

Frank M. Mitchell, former president of the old company, and receiver in its liquidation, will remain as sales manager.

The statement, issued by Lee J. Eastman, president and general manager of the New York company, also said the territory of the branch would include all of Hudson county.

O'BRIEN NAMED MANAGER OF WILLYS IN CHICAGO

Chicago, Dec. 18.—P. C. Cartley, president of P. C. Gartley, Inc., Willys and Willys-Knight distributors in the Chicago territory, announces the appointment of J. E. O'Brien as manager of the company's branch No. 1 at 2247 South Michigan Ave. Mr. O'Brien, a veteran in the industry, has been identified for twenty years with automobile selling activities, his experience covering the factory representative, export and retail fields.

Offers Football Tickets For Names of Prospects For New Chrysler Cars

New Orleans, La., Dec. 18.—An opportunity for football enthusiasts to earn a free trip to Pasadena, Cal., to attend the Southern California-Tulane New Year's Day football classic is being offered by the George W. Stem Motor Company, Chrysler distributor.

The method of earning these trips is not involved in any contest, but consists in supplying the company with the name of a prospective purchaser of a Chrysler automobile. Award of the ticket is contingent, of course, upon the prospect buying a car. The purchase must be made before December 22.

NEW CHEVROLET FIRM FORMED IN NEW ORLEANS

New Orleans, La., Dec. 18.—Announcement of change in the name of their firm, and that it will hereafter be the dealership for Chevrolet cars and trucks, was made by James B. Eaton and Walter E. McDiarmid. The new firm is the Eaton-McDiarmid Chevrolet Company, Inc., with salesrooms at 317 North Rampart St.

LITCHFIELD ON COAST

Los Angeles, Dec. 18.—P. W. Litchfield, president of the Goodyear Tire and Rubber Company, Akron, is now in this city on his semi-annual inspection visit to the company's Los Angeles factory.

This year . . Wise dealers are pushing the PINES WINTERFRONT

. . . every sale makes them $6 profit

PINES WINTERFRONT is an easy selling, big profit item that their customers want and need. An item that makes the dealer $6 profit in 10 minutes. Not a novelty accessory that may or may not sell. But a proved necessity with an established demand everywhere.

Low prices make sales easier

At only $15 for small cars; $20 for large cars, the Pines Winterfront is the season's real bargain in motor protection. At this low price a car owner cannot afford to risk cold weather dangers when this automatic motor and radiator protection provides motor insurance far beyond its original cost.

An assortment of real sales ammunition has been prepared to help you—and is available through your Pines distributor. Get in touch with him at once. Write, phone or wire him your order at once.

PINES WINTERFRONT COMPANY
1151 North Cicero Ave., Chicago

NEW PINES FUEMER
A New Profit-Maker for Dealers
Here's the new device—the Pines Universal Fuemer—the only device that instantly starts cold motors! It fits all model cars and motors and can be installed in a jiffy. Used as standard equipment by three fine car manufacturers. Not merely an accessory, but a NECESSITY. Ask your Pines distributor for full details

Automotive Daily News

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Member A. B. C.

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To Other Countries—One Year, $15.00; two years, $26.00. Single copies, 5 cents.

SATURDAY, DECEMBER 19, 1931

ADVERTISING AND BUSINESS HEADQUARTERS

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Ayres Looks Ahead

IN HIS RECENT address before the Cleveland Chamber of Commerce, Col. Leonard Ayres had some interesting things to say. Col. Ayres was frank in saying that the present depression has been so exceptional that it is unsafe to make forecasts. The interruption of the normal business cycle has been so complete that it is difficult to base any prediction on past experience.

However, Col. Ayres did say that in all probability we have seen the bottom of the depression area. He believes that a year from now will find industrial production, railway loadings and factory employment at higher levels than they are today. This, of course, means that we shall be in some stage of the revival, but how far advanced our position will be, the economist does not hint.

Col. Ayres believes that gold exports will be smaller, money in circulation less and bank failures fewer in 1932 than they were this year. Commercial failures will probably be more numerous. The cause of this would be long continued strain on commercial organizations not equipped to withstand the pressure.

He holds that dividend payments will probably be lower, the cost of living less and wages of industrial workers and railway employees also lower.

Taking the picture of 1932 as it is drawn by Col. Ayres, we are justified in seeing a business revival in its early stages. His forecast agrees with the general feeling among executives of the automotive industry. A. R. Erskine of Studebaker has stated that he expects to see 10 to 15 per cent. more business next year. Charles W. Nash has expressed the belief that there will be a moderate increase in sales volume. R. H. Grant, vice-president in charge of sales for General Motors, said several weeks ago that he looked for an increase in his company's business, presumably of modest proportions.

It may not be altogether out of order to say that, in considering a depression such as the present one, which has refused to be bound by what we have considered the rules of such periods of business decline, this fact cuts both ways. If we are not justified in predicting an impending boom, neither are we justified in predicting a further long continuance of depression. Economists are at sea, and, now that we have turned the corner, revival may come faster than they would venture to hope.

If We Had a Man Like Lincoln

THERE ARE MANY factors at the present time holding up revival of business which could be cleared away if we had a real leader. By a real leader we mean a man whose character would enlist the confidence of all classes and induce co-operation on every hand to end our present troubles.

In the present situation certain readjustments would work to the benefit of industry and labor alike. As an instance: If railway employees would take a wage cut at the present time, it would go a long way toward enabling the roads to get back on a basis of profitable operation.

The men hesitate to accept any sort of wage readjustment. The reason they hesitate is that past experience teaches them that while the cut will come prompty if they permit it now, a corresponding increase, when business justifies, will be delayed to the last possible moment. If there were a leader who would and could promise the men a readjustment upward when business justifies, in return for a decrease now when business needs it, the railway workers would probably agree to take their temporary cut. This case is repeated in other fields.

It is not too much to say that our leadership in the troublesome times we have gone through has failed lamentably to live up to its implied boasts of competency when the boom times were with us.

GENERAL DESIGNS NEW MOTOR TIRE

Akron, Dec. 18.—A new type of of automobile tire—the first passenger car tire to be designed with a triangular instead of a round cross-section—was announced by the General Tire and Rubber Company.

With almost straight, stream-lined side-walls, this tire will carry two and one-half times the volume of air contained in the ordinary balloon tire for the same size car, and will operate at about one-third of the air pressure required for ordinary balloons.

Built like a pyramid, with its apex at the tread and the broad base attached directly to the enlarged hub, the new General Streamline Jumbo tire will actually eliminate automobile wheels. Perfection of this stream-lined tire follows one and a half years of experimental research and development work by General Tire engineers.

Tests over many thousands of miles on all kinds of road surfaces have demonstrated that the new tire has the following advantages, according to Charles J. Jahant, vice-president of General Tire:

Large air volume and low air pressure give motorists sensation of "floating" over the road.

Large tires not only absorb all ordinary road shock, such as roughness in pavements and ruts, rocks and bumps on dirt roads, but, if necessary in an emergency, the car can be driven over curbstones or over railroad tracks without discomfort to the driver or damage to the tires.

Stream-lined, almost straight side walls, found in no other tire, reduce resistance from the air and thus increase power of car, although this is not principal feature.

COMING EVENTS

JANUARY

9-16—**New York City.** National Automobile Chamber of Commerce. National Automobile Show
9-16—**San Francisco.** Annual Automobile Show, West Coast-San Francisco Motor Car Dealers Association.
9-17—**Los Angeles.** Annual Automobile Show of the Los Angeles Motor Car Dealers Association
11-14—**Detroit, Mich.** American Road Builders Association, twenty ninth convention and show.
14—**New York City.** Society of Automotive Engineers, annual dinner Pennsylvania Hotel.
16-18—**Detroit, Mich.** National Tire Dealers Association, annual meeting.
16-23—**Newark, N. J.** Newark Automobile Dealers' Association's annual show
16-23—**Buffalo N. Y.** Annual automobile show of Buffalo Automotive Trade Association, Inc., 174th Regiment Armory
17-23—**Cincinnati.** Automobile show of Cincinnati Automobile Dealers' Association
16-23—**Milwaukee.** Annual Automobile Show, Milwaukee Automotive Trades, Inc.
16-23—**Omaha, Neb.** Annual show, Omaha Auto Traders Association.
18-20—**Chicago.** National Wheel and Rim Association, Edgewater Beach Hotel, convention.
18-23—**Portland, Me.** Annual Automobile Show.
18-23—**Brooklyn, N. Y.** Brooklyn Motor Vehicle Dealers' Association, show.
18-23—**Louisville, Ky.** Louisville Automobile Dealers' Association, show. Garland Lea, manager.
18-23—**Rochester, N. Y.** Annual Automobile Show, Rochester Automobile Dealers Association, Inc.
23-28—**Columbus, O.** Annual Automobile Show, Columbus Automobile Dealers Company. Auditorium.
23-30—**New York.** National Motor Boat Show, Grand Central Palace.
23-30—**Detroit Mich.** Annual show Convention Hall.
23-30—**Baltimore.** Annual Automobile Show.
23-30—**Minneapolis.** Annual Automobile Show of Minneapolis Automobile Trade Association.
23-30—**Pittsburgh.** Annual automobile show of Pittsburgh Automobile Dealers' Association, Motor Square Garden
25-29—**Detroit, Mich.** Society of Automotive Engineers, annual meeting Bok Cadillac Hotel.
30-Feb. 6—**Cleveland.** Annual Automobile Show of the Cleveland Automobile Manufacturers and Dealers Association, Public Auditorium.
30-Feb. 6—**Chicago, Ill.** National Automobile Chamber of Commerce. National Automobile Show
30-Feb. 6—**Chicago, Ill.** Automobile Salon Hotel Drake.

FEBRUARY

4-6—**Springfield, Ill.** Annual Automobile Show, Springfield Automobile Dealers Association, State Arsenal.
6-13—**St. Paul.** Annual Automobile Show St. Paul Automobile Dealers Inc.
7-13—**St. Louis.** Annual Automobile Show, St. Louis Automobile Dealers Association. New Mart Building.
10-13—**Trenton, N. J.** Annual Automobile Show, Trenton Automobile Trade Association.
13-20—**Kansas City, Mo.** Annual Automobile Show. Kansas City Motor Car Dealers' Association. American Royal Building
13-20—**Los Angeles, Cal.** Automobile Salon Hotel Biltmore.
17-21—**Peoria, Ill.** Automobile Show.
22-March 5—**San Francisco, Cal.** Automobile Salon. Palace Hotel.

MARCH

3- 5—**Gary, Ind.** Automotive Trade Association, annual show. A. H. Travers, chairman.

Trade Association News

Motor Truck Executives Invited to Convention

Tom Snyder, secretary-treasurer of the Truck Association Executives of America, is sending out to members of the organization the following bulletin:

"If the action of the National Grange in its attitude toward Federal regulation of motor trucks; if the action of the National Industrial Traffic League and its attitude toward Federal regulation of motor trucks; if the action of the United States Chamber of Commerce, proposing that railroad regulation be toned down, or truck regulation toned up; if the declared intention of the railways to ask Congress for a complete monopoly of all means of transportation; if the continued, carefully planned and fostered action of the railway brotherhoods, in revamping and reshaping their legislative battering rams, backed by political threats; if our industrial internal turmoils, due to the absence of industrial standards in service, in rate structures and in centralized clearing house terminals are not sufficient reasons to bring a representative from every truck association in America to our meeting at Detroit on January 11 and 12, the success of this industry, now rapping loudly on the door of opportunity, will no doubt be considerably delayed and may, from a democratic point of view, be wholly lost.

"This office should know your conclusions. You are also requested to extend an invitation to your membership to attend the twenty-ninth annual convention and road show of the American Road Builders' Association, at Detroit from Monday, January 11, to Friday, January 15."

MINNEAPOLIS PLANS FOR ELABORATE SHOW

Minneapolis, Minn., Dec. 18.—Celebrating a quarter of a century of progress in automotive expositions in the Northwest, the twenty-fifth annual Northwest Automobile Show, to be held January 23 to 30, 1932, at the Minneapolis Municipal Auditorium, will be the most elaborate affair ever sponsored by the Northwest Automobile Show Association, D. A. Odell, president, announces.

Five Minneapolis automobile distributors will direct plans for the exposition. Mr. Odell, Pierce-Arrow distributor, heads the committee, and the others are C. L. Holt, vice-president of the show; Fred B. Walker, treasurer; Harold L. Schaefer, secretary, and W. R. Stephens, director.

GARAGE OWNERS GROUP ELECTS JAMES DOOLAN

Jersey City, N. J., Dec. 18.—James Doolan has been elected president of the Hudson County Garage Owners' Association.

Other officers elected for the year are John Kieser, vice-president; Frank Mears, treasurer; Frank Koch, secretary, and John Newman, sergeant-at-arms.

The county and state associations plan to confer with Motor Vehicle Commissioner Harold G. Hoffman to ask for a moratorium to postpone the dead line on new license plates to March 1. The idea is to give the unemployed a chance to raise money for the plates and increase the revenue earned by the state on gasoline tax by preventing people from laying their cars up for the winter because they are unable to get plates before January 1.

PROF. LAMB TO HEAD A. C. S. DURING 1933

New York, Dec. 18.—Election of Prof. A. B. Lamb of Harvard University as president of the American Chemical Society for 1933 is announced. The president for 1932 is Dr. L. V. Redman, vice-president and director of research of the Bakelite Corporation, Bloomfield, N. J., who succeeds Prof. Moses Gomberg of the University of Michigan on January 1.

The society elects each year a president and a president-elect, who serve in successive years.

FORT WORTH A. T. A. ELECTS S. C. WEBB

Fort Worth, Tex., Dec. 18.—At the annual meeting of the Fort Worth Automotive Trades Association, held a few days ago, the following officers were elected for the ensuing year: Sanford C. Webb, president; A. P. Mitchell, first vice-president; Frank Melton, second vice-president; Cecil C. Cooke, third vice-president, and Phil C. Record (re-elected), secretary.

Directors named were Clarence Kraft, retiring president; Ernest Allen, Steve Cooke, Percy Garrett and Harry Windmiller.

Plans for the 1932 automobile show, which is expected to be one of the most elaborate ever held in Fort Worth, were discussed at the meeting. The show will be held during the week of January 31 to February 7, inclusive.

NEW YORK & CHICAGO
Show Issues
Automotive Daily News
PUBLICATION DATES

NEW YORK	CHICAGO
Saturday, January 9	Saturday, January 30
Monday, January 11	Monday, February 1
Tuesday, January 12	Tuesday, February 2
Wednesday, January 13	Wednesday, February 3
Thursday, January 14	Thursday, February 4
Friday, January 15	Friday, February 5

Write for literature giving details of extra distributions at hotels, at the shows, dealer meetings, conventions, etc., also extra mailings to dealers, jobbers, fleet owners, etc.

Closing Dates: Two days preceding dates shown. On advance notice giving exact size of space copy will be accepted up to 9 a. m. one day preceding.

RECIPE for getting more people to buy automobiles in New York City: Ask more people to buy automobiles! • You can ask for orders from two-thirds of the city families and one-fifth of those in the suburbs—through one newspaper—The News!

CIRCULATION: November average: 1,374,198 daily; 1,787,675 Sunday.
ADVERTISING: November 1,563,575 lines; 11 months 13,755,037 lines, a gain of 1,842,589 lines over 1930.
MILLINE: One time general rate—$1.19 (a new low).

• ***THE NEWS,*** ***New York's Picture Newspaper***

Kohl Building, San Francisco + Tribune Tower, Chicago + 220 EAST 42nd STREET, NEW YORK CITY

TRUCK INTERESTS MAP OPPOSITION TO TAX INCREASE

(Continued From Page 1)

attempting to impose this tax on all trucks, no matter whether they carry Maryland or District of Columbia license tags or whether they are privately owned or are public carriers.

Clem D. Johnston of Roanoke, Va., president of the Virginia Motor Truck Owners' Association, asserted that an effort is being made in Virginia by the State Railroad Employees' Association to have the Legislature abolish reciprocity with the District of Columbia. Mr. Johnston said that his organization is fighting this move.

A letter to the meeting from Senator Hiram Bingham of Connecticut was read, its purport being that Congress, in its study of the motor transportation situation, would be helped by an expression of views from the bus and truck operators.

About 200 representatives of Washington firms attended the meeting. John W. Hardell, president of the Commercial Motor Vehicle Owners' Association, presided. Reorganization of the association was voted, the objective being a greater membership and wider scope. The next meeting of the organization will take place on December 29.

ROCKNE SIX SALES OUTLETS REPORTED RAPIDLY GAINING

(Continued from Page 1)

Six dealers before February 1," Mr. Graham continued. "And by the middle of the summer the organization will probably include 5,000 retail agencies for the new car.

"It is difficult to estimate the average number of workers employed by each dealer because of the variance in cities' population. However, each city will have a new and distinct Rockne Six sales and service headquarters, with jobs for executives, office and clerical workers, salesmen for new and used cars and shop and service staffs. The magnitude of the project and the importance of this contribution to employment is readily reckoned."

POTENTIAL 309,600 NEW CAR MARKET SEEN IN N. Y. AREA

(Continued from Page 1)

must be made in the very near future and that as a result there are more prospective purchasers of new automobiles in this area than at any time since 1925 or 1926.

"Deficiency of sales during the last two years plus normal expectancy makes an unprecedented potential market for the sale of approximately 309,600 new automobiles in this area in 1932," the meeting was told by Robert Cole, president of the Hudson Motor Car Company of New York, distributor of Hudson and Essex cars in this city.

PLYMOUTH TO AID INDEPENDENTS TO SERVICE PLYMOUTHS

Detroit, Mich., Dec. 18.—Official recognition of the independent garage as a factor in the servicing of Plymouth motor cars is seen in the forwarding of maintenance data to more than 55,000 independent garages by Plymouth Motor Corporation within the last few days.

Plymouth is the first of the large manufacturers of motor cars officially to recognize the independent garage as an auxiliary service point for their product. A similar campaign was conducted by this company last year.

The service information furnished to these 55,000 garage owners includes a carefully prepared maintenance chart, giving complete instructions covering the more common adjustments of the new Floating Power Plymouth.

"We want to assist you in handling your new Plymouth business properly," says F. L. Rockelman, president, in a letter to garage owners.

"We trust that this chart will give you the type of maintenance information you will require. It also contains some very important general information about Floating Power which we trust you will give yc r careful attention."

Mr. Rockelman further advises the independent garages that genuine parts for Plymouth cars are available to them from their nearest Chrysler, Dodge or De Soto dealer, at prices as low as any in the industry.

"By using genuine parts and making adjustments in the manner recommended by the factory service department," he states, "you will best be able to render the prompt and intelligent service which will make you many friends among the swiftly growing army of Plymouth owners."

This move by Plymouth assures the Plymouth owner, who, in an emergency, goes to an independent garage for service on his Plymouth car, that the garage man will have a working knowledge of his car.

DETROIT GEAR CO. REPORTS RENEWAL OF 1931 CONTRACTS

Chicago, Ill., Dec. 18.—Current report of the Detroit Gear and Machine Company, division of Borg-Warner Corporation, reveals that all of its numerous standard equipment parts contracts with large automobile companies have been renewed for the coming year.

It also has just received orders for transmissions and two for free wheeling equipment. This was stated today by C. S. Davis, president of the parent corporation.

This month the Detroit Gear and Machine Company will introduce three free wheeling models and one new transmission. The company manufactures transmissions and gears for leading automobile manufacturers.

TARIFF REVISION WOULD AID TRADE, SAYS N. A. C. C. CHIEF

(Continued from Page 1)

bol of comparison between values of different commodities entering world trade.

"In the final analysis, human energy as represented in goods or services is the only thing really exchanged between people of different countries.

"With the prevailing scarcity of gold in most foreign countries, industry and agriculture in this country cannot expect to find markets for their products abroad unless the nation as a whole is prepared to accept commodities and manufactured products in payment instead of precious metal of which the United States already has the predominating share."

Mr. Bauer recommends revision of laws in order that the United States might follow a policy of tariff reciprocity, thus assuring American manufacturers equality in the world's markets and enabling them to put workers again into jobs. There is no reason, he believes, why parts and material for a million cars for foreign consumption cannot be made again by American workmen and help domestic prosperity if our national laws are adjusted to permit payment of American commodities by foreign products.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

INSTANT CON

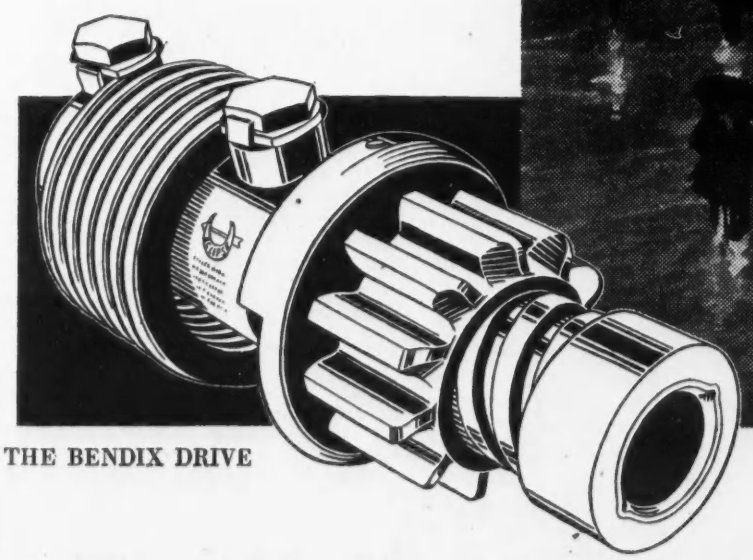
IN STARTING

Your Bendix Drive—the mechanical hand that cranks your car. What would motoring be without it?

You say "GO"—say it with a touch of a button. Automatically, your Bendix Drive takes hold, starts the engine, lets go; and protects the starter from damage in unintended operation.

Here is quick, easy, dependable control of engine starting.

ECLIPSE MACHINE COMPANY · ELMIRA, NEW YORK
ECLIPSE MACHINE CO., *Limited* · WALKERVILLE, ONT.
(SUBSIDIARIES OF BENDIX AVIATION CORPORATION)



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Bendix Brakes, Bendix Drive, Bendix Clutch Control, Bendix Startix, Eclipse Aircraft Starters and Generators, Stromberg Carburetors, B-K Vacuum Brake Boosters, Aircraft Propellers, Bendix-Westinghouse Air Braking Systems, Marine Instruments, Scintilla Aircraft Magnetos, Pioneer Instruments, Delco Aircraft Ignition, Weather Instruments, Cowdrey Brake Testers and other equipment.

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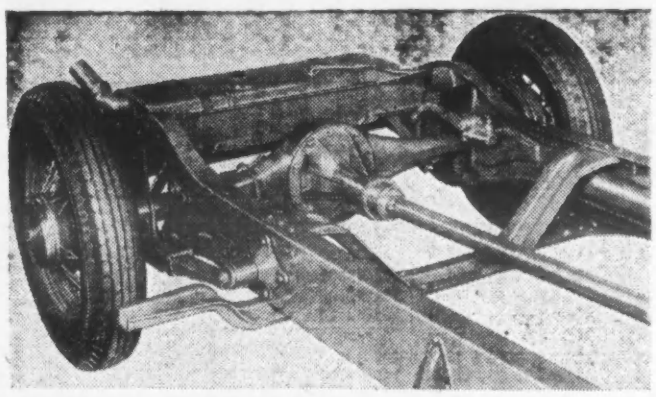
AUTOMOBILE



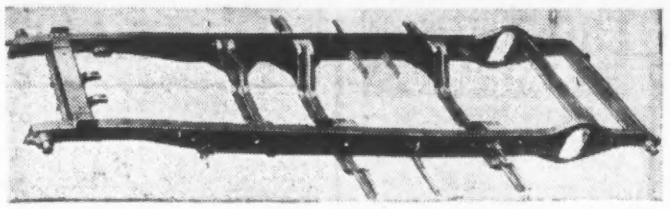
A CLOSE-UP VIEW of the "Banjo" frame of the Graham Eight shows the double flanged section of rail both under and over the rear axle, thus maintaining a maximum of stiffness throughout the rear of the frame. Rubber bumpers, which check excessive sprink action, and, in addition, dash-controlled shock absorbers are used front and rear. In the design the frame is cradle between the two springs, rather than being carried on top of them, and the springs are six inches further apart

NEW BANJO FRAME DESIGN IS UNIQUE FEATURE OF GRAHAM

(Continued from Page 1)

lutions per minute, is higher. Aluminum pistons of the invar strut type are used. The taxable horsepower is 31.25. Higher compression ratios are attained through modification of the combustion chamber shape. There has also been modification of the cam contours. Dual valve springs are used instead of the single springs formerly used. These changes, with improvements in the manifolding and exhaust system, combine in giving the increased power characteristic.

Instead of baffle plates restricting the flow of exhaust gases, the exhaust silencer operates on the principle of a resonator or silencer. There is a clear opening through the muffler of virtually the same diameter as the exhaust pipe. Two resonator chambers are tuned to synchronize with the period of the exhaust at high speeds and low speeds respectively.



AN OUTSTANDING FEATURE in the new Graham eight line is the banjo design frame. This design is original with Graham-Paige and permits a low slung chassis, due to the outboard mounting of both front and rear springs. The rear axle extends through ports in the side rails, which permit ample space for normal axle movement

Greater efficiency in cooling has been obtained by tilting the radiator core backward to a plane parallel with the plane of the fan, so as to be equal distances from the blades at the top and the bottom. A new form of seventeen-inch fan with a new blade is stated to be quieter and to require less driving power at high speed. A Lanchester vibration dampener is used.

Ignition is Delco Remy and the battery is a Willard.

The three-speed transmission, with syncro gearshift, has a silent second helical gear drive, in constant mesh. The synchronizer governs the shifts from first to second, second to third, and third to second. The synchronizer consists of a sliding cone clutch, the form improved over that previously used.

Drive ratios are as follows:

	Transmission Ratios	Final Drive Ratios
Third Speed (High).	Direct	4.30:1
Second Speed (Intermediate) ...	1.60:1	7.07:1
First Speed (Low)..	2.82:1	12.31:1
Reverse	3.38:1	14.78:1

Two improvements are to be noted in the free-wheeling unit. Instead of a lever projecting through the floor board, a control mounted on the instrument board permits the driver to change from free wheeling to positive drive and vice versa. Once set in either position, the new unit automatically maintains free wheeling or positive drive through all shifts. Free wheeling may be obtained in all forward speeds. When reverse gear is engaged, free wheeling is automatically cut out; when a forward speed is re-engaged, free wheeling is restored.

Among the new features on this 1932 Graham line, the frame construction and spring mounting will undoubtedly attract attention. The most conspicuous feature of the new frame is the method of eliminating the high kick-up at the rear, formerly required to allow sufficient clearance over the axle. Here the top and bottom flanges of the side rail diverge, forming an oval that gives the name "banjo type" to the new design. The "head" of the banjo is cut out to provide space for normal axle movement. Instead of the usual decrease in stiffness of the rails over the rear axle, the new design, running both over and under the axle, results in increased stiffness. The rigidity of the frame is said to give increased riding ease and sense of security through the elimination of vibration.

Some interesting incidental features result from the deep banjo frame construction. The rebound of the spring is limited by the section of the side rail running under the axle. Large bumpers of live rubber, specially formed and perforated to provide gradually increasing resistance to extreme spring action, are mounted on the side rail above and below the axle. On extremely rough roads this construction provides a check against severe pitching of the body.

An advantage of the over and under construction is the facility it provides for jacking up the rear wheel. Instead of having to maneuver the jack into position under the rear axle, it is necessary only to place it under a special forged pad at the extreme rear of the car. As the jack raises the frame, the section of the side channel underneath the rear axle raises the axle and wheel from the ground.

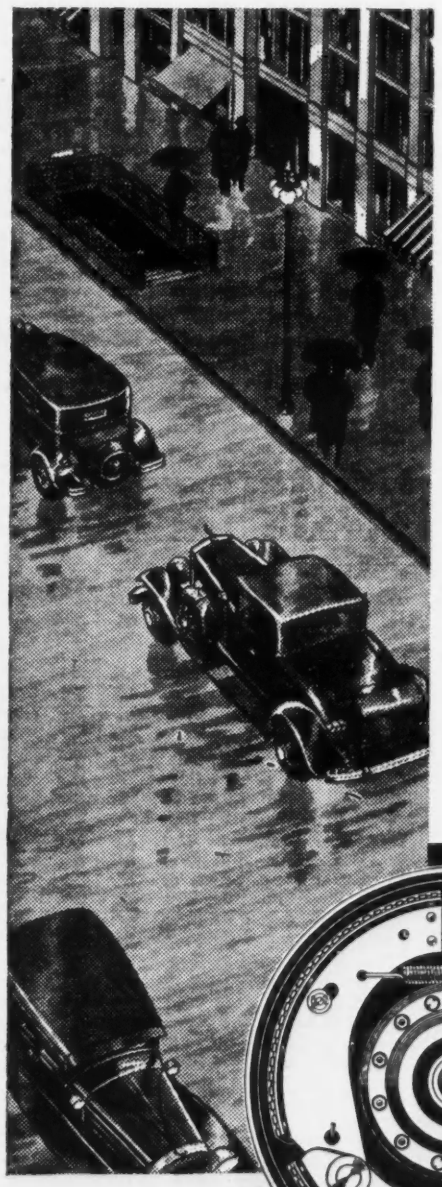
Ample clearance over the front axle without a kick-up is made possible by the outboard mounting of the springs. Since the spring and its axle clamp are removed from between the axle and the frame, the frame can be dropped correspondingly closer to the axle.

Summed up, the effect of the new Graham design is to lower both the frame and the body without affecting the clearance over the axles, and to drop the center of gravity of the body the same distance.

The marked improvement in ride and roadability claimed for the new

(Continued on Page 8)

TROL



IN STOPPING

Smooth stopping, quick stopping, sure stopping—*complete control,* always—with Bendix Brakes.

The exclusive "Servo" Action multiplies an easy pedal pressure into a powerful stopping force; under all conditions of load and speed. Mechanically dependable, mechanically rugged—complete effective enclosure against dust and water.

A large majority of automobiles depend upon Bendix Brakes for instant control of stopping.

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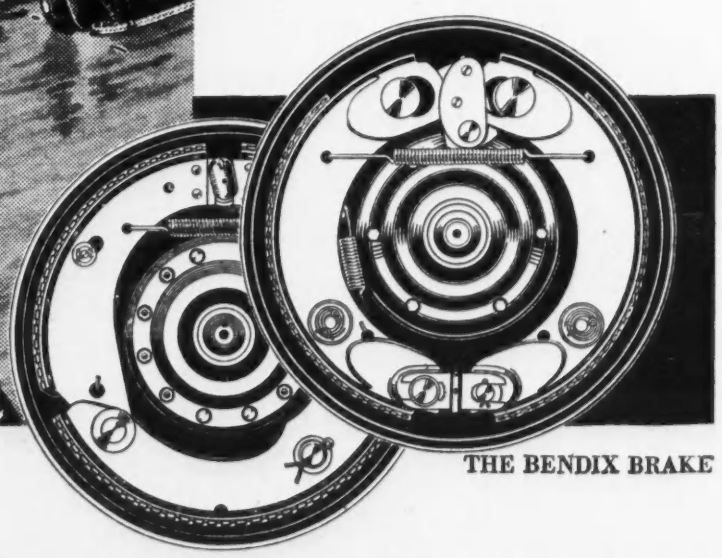

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PRODUCTS
and AVIATION

MULLINS STAMPINGS
FOR THE AUTOMOBILE INDUSTRY

WRITE!
Mullins Mfg. Corp., Salem, Ohio
332 So. Michigan Ave., Chicago.
General Motors Building, Detroit.

MANY CHANGES MADE IN BODY DESIGN OF GRAHAM BLUE STREAK

(Continued from Page 7)

design is the result of three separate factors.

The wider spacing of the springs, which are eight inches wider in front and six inches wider in the rear, reduces the angle of body tilt for any given spring deflection.

The spring deflection itself is less, for equal sidewise forces, because the load is dropped between the springs, with the center of gravity more nearly in the plane of the spring eyes.

The wider track of the wheels, which are two inches farther apart than formerly, further increases the stability.

Still another interesting feature of the new Graham frame is its cross members. Besides the main transverse braces, deep U-section cross members slung underneath the side channels and extending on each side form strong supports for the running boards and the fenders. Diagonal braces extend inward from the top flange of the side rails and join the cross members, forming strong knee braces to restrain twisting.

Important strengthening of the body structure is made possible by the flat platform foundation provided by the new frame. With the additional space between the frame and the wheels, it is possible to extend the main body sills by locating them outside the frame over the springs, providing a firm understructure for the body framework.

Another important improvement is in the steering layout. The steering gear housing is bracketed on top of the side rails, the shaft running over it instead of through it. The steering drag link is short and straight and lies directly over the front spring, protected from damage from below. By shackling the front springs at their forward ends, instead of at the rear, as formerly, full advantage is taken of the new layout to provide an improved steering symmetry, with the result, it is claimed, that road shock and wheel fight are eliminated. There is no tendency to wobble, and the car is self-straightening to a remarkable degree.

All spring mountings are of the rubber compression type. Minute vibrations set up by the road wheels are absorbed, instead of passing to the frame and body. This mounting eliminates the need for lubrication and adjustment.

The braking system combines super - hydraulic self - equalizing brakes with the newly developed Centrifuse drums. Rigid brake shoes, with increased braking area, operate within the Centrifuse drums, which have a cast iron braking surface in a steel jacket, and provide the advantages of cast iron drums with but little increase in weight over the usual pressed steel drums.

The new drum is made by pouring molten iron into the drums while they are being rotated at high speed. The liquid iron, under centrifugal force, forms a dense layer around the inner surface of the rim, and, in hardening, becomes an integral part of the assembly, firmly fused to the steel jacket.

The finished drum has a much greater mass of metal around its circumference than the thin steel drums formerly used. Under equal conditions, the new brake will run much cooler, since the greater mass of metal will absorb the same amount of heat with less temperature rise.

The outer steel jacket is flanged and ribbed, giving it increased rigidity and providing for the equalized dissipation of heat, preventing bell-mouth effect on expansion.

The cast iron rim against which the brake linings press is claimed to last much longer than steel and give a more effective braking action.

A convenient button on the dash, regulating the shock absorbers, enables the driver to vary the ride to suit the load or the road. When the control is pulled all the way out, the resistance of the shock absorbers is at its minimum. When the control is pushed in, the shock absorbers exert their greatest resistance, giving maximum control for rough roads. Between these two settings, the driver may regulate the ride according to the speed, number of passengers and road conditions.

The variation in the shock absorber resistance is actuated through linkage and levers. Moving the push-pull control varies the opening of the valves in the shock absorbers, regulating the rate of flow of the liquid.

A thorough-going plan of attaining silence in power plant, running gear and body has been carried out. We have already noted the efforts to quiet the power plant and its units. All spring shackles and spring eyes are mounted on compression-type rubber bushings, a

(Continued on Page 10)

MAJOR SPECIFICATIONS AND MECHANICAL DETAILS

Make and Model	Weight—5-P. Sedan	Wheel Base	Engine Make	Thermostat Used	Valve Arrangement	Cylinders	Bore and Stroke	Piston Disp.	Compression Ratio	Tax H. P.	Brake, H.P. and Peak R. P. M.	Pist. Make or Material	No. Main Br.	Oil Purifier	Fuel Cleaner	Carburetor	Air Cleaner
Auburn 8-98	3916	127-136	Lyc	Dole	L	8	3 x4¾	268	*5.26	28.8	98@3400	*Alum	5	Pur	—	Sch	No
Austin	$1130	75	Own	——	L	4	2.2x3	45.6	5.10	7.8	13@3000	Alum	2	—	—	Til	No
Buick 32-50	3170	114	Own	Bish-Bab	O	8	2 7/8x4¼	230.4	4.65	27.61	78@3200	CI	5	AC	AC	Mar	AC
Buick 32-60	3795	118	Own	Bish-Bab	O	8	3 1/16x4⅝	272.6	4.63	30.02	90@3000	CI	5	AC	AC	Mar	AC
Buick 32-80	4255	126	Own	Bish-Bab	O	8	3 5/16x5	344.8	4.40	35.12	104@2900	CI	5	AC	AC	Mar	AC
Buick 32-90	4340	134	Own	Bish-Bab	O	8	3 5/16x5	344.8	4.40	35.12	104@2900	CI	5	AC	AC	Mar	AC
Cadillac V-8	4645	134	Own	Yes	LV	8	3⅜x4 1/16	353	5.35	36.45	95@3000	CI	3	AC	Gas	Own	No
Cadillac V-12	5480	140-143	Own	Own	O	12	3⅛x4	368	5.50	46.9	135@3400	CI	4	AC	Gas	Own	No
Cadillac V-16	6100	148	Own	Yes	O	16	3 x4	452.0	5.50	57.5	165@3400	CI	5	AC	Gas	Own	No
Chevrolet	——	109	Own	No	O	6	3 7/16x3¾	194	5.20	26.3	60@3000	CI	3	—	—	Car	AC
Chrysler 6	2850	*175⅞	Own	Yes	L	6	3¼x4⅜	217.8	5.35	25.35	80@3400	*Alum	4	—	AC	Sch	Yes
Chrysler 8 De L.	——	187 5/16	Own	Yes	L	8	3¼x4¼	282.1	5.20	33.80	100@3400	*Alum	5	Yes	Yes	Str	Yes
Chrysler Imp. 8	4725	*211	Own	Yes	L	8	3½x5	384.8	5.00	39.2	125@3200	*Alum	9	Yes	AC	Str	Yes
Cord (Fr. Wh. D.)	4620	137½	Lyc	——	L	8	3¼x4½	296.6	5.25	33.8	115@3300	*Alum	5	Pur	AC	Sch	No
De Soto Six	2695	*169 5/16	Own	Yes	H	6	3¼x4⅛	205.3	5.35	25.35	72@3400	*Alum	4	—	AC	Car	Yes
De Soto Eight	3025	*176⅞	Own	Yes	L	8	2⅞x4¼	220.7	5.40	26.45	77@3400	*Alum	5	—	AC	Str	Yes
De Vaux 6-75	2810	113	Hall	Dole	L	6	3⅜x4	214.7	5.41	27.34	70@3400	Alum	4	AC	Ste	Til	AC
Dodge Six	2820	*176 13/32	Own	Yes	L	6	3¼x4¼	211.5	5.31	25.35	74@3400	*Alum	4	No	AC	Car	AC
Dodge Eight	3174	*180 13/32	Own	Yes	L	8	3 x4¼	240.3	5.40	28.80	84@3400	*Alum	5	Pur	AC	Str	AC
Durant 612	2820	112	Con	Bish-Bab	L	6	3¼x4	199	5.32	25.4	71@3300	*Alum	4	AC	AC	Str	AC
Durant 614	3010	112	Con	Bish-Bab	L	6	3¼x4	199	5.32	25.4	71@3300	*Alum	4	AC	AC	Str	AC
Durant 619	2710	109	Con	Bish-Bab	L	6	3¼x4	199	5.32	25.4	71@3300	*Alum	4	AC	AC	Til	AC
Essex Super Six	2750	**113	Own	——	†L	6	2⅞x4½	175.3	5.80	19.8	60@3300	Alum	3	—	Ste	Mar	AC
Ford A	2375	103½	Own	——	L	4	3⅜x4¼	200.5	4.22	24.03	40@2200	Alum	3	—	—	Zen	—
Fr'klin S 15 Trans.	3930	125	Own	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Fr'klin S 15 Trans.	4130	132	Own	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Fr'klin S 15 De L	4220	132	Own	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Graham Bros. 6	3100	113	Own	Yes	L	6	3⅛x4½	207	5.45	23.4	70@3200	*Alum	7	—	AC	Sch	Yes
Graham Std. 6	3265	115	Own	Yes	L	6	3¼x4½	224	5.45	25.35	76@3400	*Alum	7	—	AC	DL	Yes
Graham Spl. 6	3330	115	Own	Yes	L	6	3¼x4½	224	5.45	25.35	76@3400	*Alum	7	—	AC	DL	Yes
Graham Spl. 8	3560	120	Own	Yes	L	8	3⅛x4	245	5.45	31.25	85@3400	*Alum	5	AC	AC	DL	Yes
Graham Cust. 8	4100	134	Own	Yes	L	8	3 x4½	298	2.50	33.80	100@3400	*Alum	5	AC	AC	DL	Yes
Graham, Bl.-Str.	——	123	Own	Bish-Bab	L	8	3⅛x4	245.4	—	31.25	90@3400	*Alum	5	Yes	AC	DL	AC
Hudson Greater 8	3115	119-126	Own	——	L	8	2⅞x4½	233.7	5.80	26.4	87@3600	Alum	5	—	Ste	Mar	AC
Hupmobile Cen. 6	2985	114	Own	——	L	6	3¼x4¼	211.6	5.10	25.35	70@3200	Alum	4	AC	Ste	Str	Yes
Hupmobile Cen. 8	3275	118	Own	Pines	L	8	2⅞x4⅝	240.2	5.20	26.45	90@3200	Alum	5	Pur	Ste	Str	Yes
Hupmobile C	3730	121	Own	Pines	L	8	3 x4¾	268.6	5.20	28.8	100@3200	CI	5	Pur	Ste	Str	Yes
Hupmobile H & U	**	125-137	Own	Pines	L	8	3½x4¾	365.6	5.20	39.2	133@3400	Alum	5	Pur	Ste	Str	AM
La Salle V-8	4635	134	Own	Yes	LV	8	3⅜x4 1/16	353	5.35	36.45	95@3000	CI	3	AC	Gas	Own	—
Lincoln	5300	145	Own	Ful	L	8	3½x5	384	5.23	39.2	120@2900	Alum	5	Pur	Ste	Str	Un
Lincoln 12	——	145	Own	——	—	12	3¼x4½	448.0	——	——	150@3400	——	7	—	—	—	—
Marmon 70	2823	112¾	Own	Pines	L	8	2 13/16x4¼	211.2	5.50	25.4	84@3400	Alum	5	AC	AC	Str	AC
Marmon 88	4375	130-136	Own	Pines	L	8	3¼x4¾	315.2	5.50	33.8	125@3400	Alum	5	AC	AC	Str	AC
Marmon 16	530	145	Own	Pines	O	16	3⅛x4	490.8	6.00	62.5	200@3400	Alum	5	Flo	AC	Str	AC
Nash 960	2800	114¼	Own	*	L	6	3⅛x4⅜	201.3	5.10	23.4	65@3200	*Alum	7	AC	AC	Car	AC
Nash 970	3000	116¼	Own	Bish-Bab	L	8	2⅞x4⅜	227.2	5.10	26.4	78@3300	*Alum	9	AC	AC	Str	AC
Nash 980	3360	121	Own	Bish-Bab	O	8	3 x4¼	240	5.25	28.8	94@3400	*Alum	9	AC	AC	Str	AC
Nash 990	4000	124-133	Own	Bish-Bab	O	8	3¼x4½	298.6	5.25	33.8	115@3600	*Alum	9	AC	AC	Str	AC
Oakland V-8	3260	117	Own	Yes	H	8	3 7/16x3⅜	251.0	5.00	37.8	85@3400	S St	3	—	AC	Mar	AC
Oldsmobile	2935	113½	Own	——	L	6	3 5/16x4⅛	197.5	5.06	24.4	65@3350	CI	4	AC	AC	Str	AC
Packard 901-902	4570	129½-136½	Own	Yes	L	8	3 5/16x5	320.0	6.00	32.5	110@3200	*Alum	9	Yes	Yes	Own	AC
Packard 903-904	5045	142⅛-147⅛	Own	Yes	L	8	3½x5	384.8	6.00	39.2	135@3200	*Alum	9	Yes	Yes	Own	AC
Peerless St. 8	3642	118	Con	Bish-Bab	L	8	2⅞x4¾	246.0	5.00	26.45	90@3200	*Alum	5	Pur	AC	Sch	AC
Peerless Master 8	4521	125	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	115@3200	*Alum	5	Pur	AC	Sch	AC
Peerless De L.	4521	125	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	115@3200	*Alum	5	Pur	AC	Sch	AC
Peerless Custom 8	4766	138	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	120@3200	*Alum	5	Pur	AC	Sch	AC
Pierce-Arrow 54	——	137-142	Own	Pines	L	8	3½x4¾	366	5.00	39.2	125@3000	*Alum	9	Pur	Ste	Str	AC
Pierce-Arrow 52	——	142-147	Own	Pines	L	12	3⅜x4	429	5.00	54.6	150@3200	*Alum	7	Pur	Ste	Str	AC
Pierce-Arrow 53	——	137-142	Own	Pines	L	12	3¼x4	398	5.00	50.7	140@3200	*Alum	7	Pur	Ste	Str	AC
Plymouth	2710	109	Own	——	L	4	3⅝x4¾	196.1	4.90	21.03	56@2800	*Alum	3	—	AC	Car	Yes
Pontiac	2845	112	Own	Yes	L	6	3 7/16x3¾	200.0	4.90	26.3	60@3000	S St	3	—	AC	Mar	AC
Reo Royale 8-35	4650	135	Own	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo Royale 8-31	4375	131	Own	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo 8-21	3610	121	Own	Yes	L	8	3 x4¾	268.6	5.37	28.8	90@3300	*Alum	5	Han	—	Sch	Un
Reo 6-21	3525	121	Own	Yes	L	6	3⅜x5	268.3	5.30	27.3	85@3200	Alum	7	Han	—	Sch	Un
Reo Fly. Cloud 6-25	3950	125	Own	Yes	L	6	3⅜x5	268.3	5.30	27.34	85@3200	Alum	7	Han	V S	Sch	Un
Reo 8-25	4050	125	Own	Yes	L	8	3 x4¾	268.6	5.37	28.8	90@3300	*Alum	5	Han	V S	Sch	Un
Rockne 6-65	——	110	Own	Dole	L	6	3⅛x4⅛	189.8	5.20	23.4	65@3200	CI	4	—	Ste	Str	No
Rockne 6-75	——	114	Own	Dole	L	6	3¼x4⅛	205.3	5.10	25.4	72@3200	CI	4	—	AC	Str	No
Studebaker 6-55	——	117	Own	Dole	L	6	3¼x4⅝	230.0	5.10	25.4	80@3200	CI	4	No	Ste	Str	No
Studebaker Dict. 62	——	117	Own	Dole	L	8	3 1/16x3¾	221.0	5.10	30.0	85@3200	CI	9	Pur	Ste	Str	AC
Studebaker Com. 71	——	125	Own	Dole	L	8	3 1/16x4¼	250.4	5.15	30.0	101@3200	*Alum	9	Pur	Ste	Str	AC
Studebaker Pres. 91	——	135	Own	Dole	L	8	3½x4⅜	337.0	5.10	39.2	122@3200	*Alum	9	Han	Ste	Str	AM
Stutz LA	4320	127½	Own	——	O	6	3⅜x4½	241.5	5.10	27.3	85@3150	*Alum	7	Wal	AC	Zen	Un
Stutz MA	4918	134½	Own	——	O	8	3⅜x4½	322	5.50	36.4	113@3300	*Alum	9	Wal	AC	Zen	AM
Stutz MB	4863	145	Own	——	O	8	3⅜x4½	322	5.50	36.4	113@3300	*Alum	9	Wal	AC	Zen	AM
Stutz DV 32	5240	134½	Own	Bish-Bab	O	8	3⅜x4½	322	5.10	36.4	161@3900	Alum	9	Wal	Ste	Sch	AM
Willys 6-97-98 D	*	110-113	Own	Var	L	6	3¼x3⅞	193	5.26	25.3	65@3400	CI	4	Flo	AC	Til	Til
Willys 8-80 D	3131	121	Own	Var	L	8	3¼x4	245.4	5.26	31.25	80@3200	CI	5	Flo	AC	Til	Til
Willys-Knt. 66-D	3400	121	Own	Var	K	6	3⅜x4¾	255	5.26	27.3	87@3200	*Alum	7	Flo	Til	Til	Til
Willys-Knight 95	3122	113	Own	Pines	K	6	2 13/16x4⅜	177.9	5.55	20.7	60@3400	*Alum	7	*	AC	Til	AC

AUTOMOBILE INSURANCE FRAUDS HIT IN MASS.

Boston, Mass., Dec. 17.—Automobile owners who falsely register cars from low rate zones, thereby defrauding insurance companies of a portion of premiums to which they are entitled, will be barred from obtaining insurance from any other company and will not be permitted to register a motor vehicle in this state, according to a ruling made today by the Board of Appeal created under the compulsory auto insuranec law.

It is understood that a number of companies writing auto insurance are investigating all of their customers who have registered motor vehicles from localities in which summer camps are situated and that they plan to ask the board to act against those believed to have used the summer camp address as a subterfuge to obtain lower premium rates.

CUTS GASOLINE PRICE

Chicago, Dec. 18.—Standard Oil Company of Indiana has reduced price of its blue or competitive grade of gasoline one cent a gallon. New prices will be 12½ cents a gallon including 3 cent tax, against 13½ cents formerly.

WILLYS-OVERLAND DRIVEAWAY SETS 2-YEAR RECORD

(Continued From Page 1)

A. Beardsley, general sales manager, as chairman. These executives outlined the aggressive sales program to be inaugurated in 1932 and from the enthusiastic response and the large initial order of cars signed for and delivered prospects for Toledo's major industry in 1932 appear highly encouraging.

The session started at 10.30 a. m. and continued until noon, when the dealers and their aids were luncheon guests of the Willys-Overland management in the main dining room.

OF PRESENT AMERICAN PASSENGER CAR MODELS

Make and Model	Front End Drive	Ignition System	Gen. and Starter	Clutch	Transmission Make	Transmission Speeds	Transmission Type	Universals	Rear Axle	Ratio	Brakes	Steering Gear	Springs Rear	Spring Shackles	Chassis Lubric.	Tires
Auburn 8-98	Chain	Del-R	*Del-R	Long	D	3	LGS-F-SM	U	Col ½	*4.45	S D	Ross	S 56¾	Own	Bijur	17x5 50
Austin	Gear	Aut-L	*Aut-L	Rock	WG	3	——	S	Sal ½	5.25	M	Say-B	Cant	Own	Al-Z	18x3 75
Buick 32-50	Tex	Del-R	Del-R	Own	O	3	SM-F	O	Own ½	4 60	Own	Sag	S 56	Tryon	AL-Z	18x5.50
Buick 32-60	Tex	Del-R	Del-R	Own	O	3	SM-F	O	Own ¾	4.54	Own	Sag	S 55¼	Own	AL-Z	18x6.00
Buick 32-80	Tex	Del-R	Del-R	Own	O	3	SM-F	O	Own ¾	4.27	Own	Sag	S 58⅞	Own	Al-Z	18x7.00
Buick 32-90	Tex	Del-R	Del-R	Own	O	3	SM-F	O	Own ¾	4.27	Own	Sag	S 58⅞	Own	Al-Z	18x7.00
Cadillac V-8	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.75	Own-M	Sag	S 58	Own	Al-Z	19x6 50
Cadillac V-12	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	——	Own-M	Sag	S 58	Own	Alem	19x7 00
Cadillac V-16	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.39	Own	Sag	S 60	Own	Alem	19x7 00
Chevrolet	—	Del-R	—	Own	O	3	SM-F	—	Own ½	——	—	Sag	S 54	——	Alem	18x5.25
Chrysler 6	Morse	Del-R	Del-R	Borg	O	3	BW-F	U	Own ½	4.60	H	War	S 53⅛	Tryon	Al-Z	19x5 25
Chrysler 8 De L.	Morse	Del-R	Del-R	Borg	O	4	BW-F	—	Own ½	4.30	H	——	S 54⅝	——	Al-Z	17x6.50
Chrysler Imperial 8	Morse	Del-R	Del-R	Borg	O	4	BW-F	—	Own ½	3.82	H	Ross	S 57½	——	Al-Z	18x7.00
Cord (Fr. Wh. Dr.)	Link	Del-R	*Del-R	Long	D	3	——	*	Col F	4.80	H	Gem	S 62	Own	Bijur	18x7 00
De Soto Six	Var	Del-R	Del-R	Borg	O	3	BW-F	—	Own ½	4.33	H	Own	S 53⅜	——	Al-Z	19x5 00
De Soto Eight	Var	Del-R	Del-R	Borg	O	3	BW-F	—	Own ½	4.60	H	Own	S 54⅝	Rub B	Al-Z	19x5 25
De Vaux 6-75	Morse	Aut-L	*Aut-L	Borg	N	3	NP-F	S	NP ½	4.40	S D	NP	S 54¼	Tryon	Al-Z	19x5 00
Dodge Six	Morse	Del-R	Del-R	Borg	O	3	BW-F	S	Own ½	4.60	H	War	S 55¼	Tryon	Al-Z	19x5 00
Dodge Eight	Morse	Del-R	Del-R	Borg	O	3	BW-F	S	Own ½	4.60	H	War	S 54⅝	Rub B	Al-Z	18x5.50
Durant 612	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	4.40	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 614	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	4.40	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 619	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	3.90	S D	Own	S 54	Tryon	Al-Z	19x4.75
Essex Super Six	Morse	Aut-L	*Aut-L	Own	O	3	BW-F	S	Own ½	5.40	Bendix	Gem	S 54⅛	Own	Alem	19x5.00
Ford A	Var	Own	*Own	Own	O	3	——	S	Own ¾	3.78	M	Gem	S Tr39	Own	Al-Z	19x4.75
Franklin S 15 Trans.	Chain	Del-R	*Del-R	Br-L	*	—	——	M	Own ½	‡4.54	H	Gem	El 42	None	Al-Z	19x6.50
Franklin S 15 Trans.	Chain	Del-R	*Del-R	Br-L	*	—	——	M	Own ½	‡4.54	H	Gem	El 42	None	Al-Z	19x6.50
Franklin S 15 De L	Chain	Del-R	*Del-R	Br-L	WG	3	——	S	Own ½	‡4.73	H	Gem	El 42	None	Al-Z	19x6.50
Graham Pros. 6	Link	Del-R	*Del-R	Long	—	3	BW-F	—	——	4.45	H	Ross	S 54	ERS	Al-Z	19x5.00
Graham Std. 6	Link	Del-R	*Del-R	Long	—	3	BW-F	—	——	4.30	H	Ross	S 54	ERS	Al-Z	5.50x18
Graham Spl. 6	Link	Del-R	*Del-R	Long	—	4	BW-F	—	——	4.09	H	Ross	S 54	ERS	Al-Z	6.00x17
Graham Spl. 8	Link	Del-R	*Del-R	Long	—	4	BW-F	—	——	4.09	H	Ross	S 54	ERS	Al-Z	6.00x17
Graham Cust. 8	Link	Del-R	*Del-R	Long	—	4	BW-F	—	——	4.09	H	Ross	S 56	ERS	Al-Z	6.50x18
Graham, Bl.-Str.	Link	Del-R	Del-R	Long	WG	3	SM-WG-F	S	Sal ½	4.30	H	Ross	S 54	ERS	Al-Z	17x6.00
Hudson Greater 8	Morse	Aut-L	*Aut-L	Own	O	3	BW-F	S	Own ½	4.64	Bendix	Gem	S 54⅛	Own	Alem	18x5.50
Hupmobile Cen 6	Chain	Aut-L	*Aut-L	Borg	WG	3	BW-F	M	Sal ½	4.70	S D	Ross	S 53	Tryon	Al-Z	19x5.50
Hupmobile Cen 8	Morse	Aut-L	*Aut-L	Borg	WG	3	BW-F	U	Sal	4.55	S D	Ross	S 52¾	Rub B	Al-Z	19x5.50
Hupmobile C	Morse	Aut-L	*Aut-L	Long	WG	3	BW-F	U	Own ½	4.55	S D	Ross	S 54	Own	Alem	19x6 00
Hupmobile H and U	Morse	Aut-L	*Aut-L	Long	WG	3	BW-F	U	Own ½	4.07	S D	Ross	S 57	Own	Alem	19x6.50
La Salle V-8	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.75	Own-M	Sag	S 58	Own	Alem	19x6 50
Lincoln	——	Aut-L	*Aut-L	Long	O	3	BW-F	S	Tim F	4.58	Bendix	Own	S 62	Own	Alem	7.00x19
Lincoln 12	Chain	—	—	—	—	—	——	—	——	——	Bendix	Gem	——	——	——	18x7.50
Marmon 70	Diam	Del-R	*Del-R	Rock	WG	3	BW-F	S	Sal ½	4.70	Bendix	Ross	S 54⅛	Tryon	Al-Z	29x5.50
Marmon 88	Diam	Del-R	*Del-R	Rus	D	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Al-Z	19x6 50
Marmon 16	Diam	Del-R	Del-R	Rus	M	3	BW-F	S	Sal ½	3.78	Bendix	Ross	S 60	Rub B	Al-Z	18x7 00
Nash 960	Var-G	Aut-L	*Aut-L	Borg	O	3	SM-DG-F	O	Own ½	4.73	M	Ross	S 50⅞	Own	Alem	29x5.00
Nash 970	Diam	Aut-L	*Aut-L	Borg	O	3	SM-DG-F	O	Own ½	4.73	M	Ross	S 50⅞	Own	Alem	29x5.25
Nash 980	Diam	*Aut-L	*Aut-L	Borg	O	3	SM-DG-F	O	Own ½	4.46	M	Gem	S 55	*	Bijur	28x6.00
Nash 990	Diam	*Aut-L	*Aut-L	Borg	O	3	SM-DG-F	O	Own ½	4.50	Bendix	Gem	S 57⅛	†	Bijur	31x6.50
Oakland V-8	Link	Del-R	Del-R	Own	M	3	SM	M	Own ½	3.90	M	Sag	S 54½	Inlox	Al-Z	28x5.50
Oldsmobile	Chain	Del-R	Del-R	Borg	M	3	SM	U	Own ½	4.54	Bendix	Sag	S 54½	Tryon	Alem	28x5.25
Packard 901-902	Morse	N E	Dyn	Long	O	4	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	6.50x19
Packard 903-904	Morse	N E	Dyn	Long	O	4	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	7.00x19
Peerless St. 8	Link	Aut-L	*Aut-L	Rock	WG	3		S	Sal ½	4.70	Bendix	Ross	S 56⅞	Rub B	Alem	29x5.50
Peerless Master 8	Morse	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.00
Peerless De L.	Morse	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.00
Peerless Custom 8	Link	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.50
Pierce-Arrow 54	Chain	Del-R	*Del-R	Long	O	3	SM-F	S	Own ½	4.42	Bendix	Ross	S 61	Faf	——	18x6.50
Pierce-Arrow 52	Chain	Del-R	*Del-R	Long	O	3	——	S	Own ½	4.42	Bendix	Ross	S 61	Faf	——	18x7.00
Pierce-Arrow 53	Chain	Del-R	*Del-R	Long	O	3	——	S	Own ½	4.42	Bendix	Ross	S 61	Faf	——	18x7.00
Plymouth	Var	Del-R	Del-R	Own	O	3	BW-F	O	Own ½	4 33	H	War	S 53⅜	Tryon	Al-Z	19x4.75
Pontiac	Morse	Del-R	Del-R	Own	O	3	——	M	Own ½	4.55	M	Sag	S 54	Inlox	Al-Z	29x5.00
Reo Royale 8-35	Morse	Del-R	Del-R	Long	O	3	SM	U	Own ½	4.07	H	Ross	S 57½	Own	Far	6.50x18
Reo Royale 8-31	Morse	Del-R	Del-R	Long	O	3	SM	U	Own ½	4.07	H	Ross	S 57½	Own	Al-Z	6.50x18
Reo 8-21	Link	Del-R	Del-R	Long	O	3	SM	U	Own ½	4.42	H	Ross	S 55⅜	Tryon	Al-Z	17x6.00
Reo 6-21	Morse	Del-R	Del-R	Long	O	3	SM	U	Own ½	4.07	H	Ross	S 55⅜	Tryon	Al-Z	17x6.00
Reo Fly. Cloud 6-25	Morse	Del-R	*Del-R	Long	O	3	SM	U	Own ½	4.42	H	Ross	S 55⅜	Own	Al-Z	17x6.50
Reo 8-25	Link	Del-R	*Del-R	Long	O	3	SM	U	Own ½	4.42	H	Ross	S 55⅜	Own	Al-Z	17x6.50
Rockne 6-65	Morse	Aut-L	*Aut-L	Borg	O	3	SM-BW-F	M	Spic ½	4.27	Bendix	Ross	S 54	Tryon	Al-Z	18x5.25
Rockne 6-75	Chain	Aut-L	*Aut-L	Borg	O	3	SM-BW-F	M	Own ½	4.73	Bendix	Ross	S 54	Tryon	Al-Z	18x5.50
Studebaker 6-55	Chain	Del-R	*Del-R	Long	O	3	BW-F	S	Own ½	4.27	Bendix	Ross	S 54	Tryon	Alem	18x5.50
Studebaker Dict. 62	Cel	Del-R	*Del-R	Long	O	3	BW-F	S	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	18x5.50
Studebaker Com. 71	Cel	Del-R	*Del-R	Long	O	3	BW-F	S	Own ½	4.73	Bendix	Ross	S 56	Faf	Alem	18x6.00
Studebaker Pres. 91	Var-G	Del-R	*Del-R	Borg	O	3	BW-F	S	Own ½	4.31	Bendix	Ross	S 60	Faf	Alem	18x6.50
Stutz LA	Link	Del-R	Del-R	Borg	D	4	——	U	Sal ½	4.75	H	Gem	S 60	Own	Bijur	19x6 00
Stutz MA	Link	Del-R	Del-R	Long	D	4	——	M	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	20x6 50
Stutz MB	Link	Del-R	Del-R	Long	D	4	——	M	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	20x7.00
Stutz DV 32	Link	Del-R	Del-R	Long	D	4	——	M	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	18x7.00
Willys 6-97-98 D	Link	Aut-L	*Aut-L	Borg	O	3	BW-F	S	Own ½	4.60	Bendix	Own	*S 49¾	Tryon	Alem	19x5.00
Willys 8-80 D	Link	Aut-L	*Aut-L	Borg	O	3	BW-F	S	Own ½	4.40	Bendix	Ross	S 56	Tryon	Alem	18x5.50
Willys-Knight 66 D	Link	Aut-L	*Aut-L	Rock	O	3	BW-F	S	Own ½	4.18	Bendix	Ross	S 56	Tryon	Alem	18x6.00
Willys-Knight 95	Link	Aut-L	Aut-L	Borg	O	3	BW-F	S	Own ½	4.89	Bendix	Gem	S 51	Tryon	Alem	19x5.00

KEY TO ABBREVIATIONS

Weight—‡Austin standard 2 passenger coupe. **Hupmobile model H weighs 4,095 pounds, and model U 4,360 pounds. *Studebaker, 7 pass sedan. *Willys 6-97D weighs 2,670 and the 98 D weighs 2,706 pounds.

Wheel Base—*Over all length of chassis instead of wheel base, which manufacturers refuse to give. **Essex, seven-passenger sedan available on 119-inch wheel base.

Engine Make—Con. Continental; Lyc. Lycoming, Hall. De Vaux-Hall Motors Corp.

Thermostat—Bish-Bab. Bishop & Babcock; Dole. Dole Valve Co. Chicago, Ill.; Ful. Fulton Co.; Pines. Pines Winterfront; Var. various makes. *Using Dole and Bish-Bab.

Valve Arrangement—L, L head; H, horizontal; O, overhead; S, sleeve valve; LV, V-type L head. *Air cooled. †Thermo syphon water circulation.

Compression Ratio—*Optional on the Auburn.

Piston Material—*Alum, alumtnum with invar struts; Alum, aluminum alloy; CI, cast iron; S St, semi-steel.

Oil Purifier—Pur, Purolator; Wal, Wall; Han, Handy; AC, AC Spark Plug Company; Ste, Stewart-Warner; Ski, Skinner; Flo, Floato.

*Using both Floato & Skinner.

Fuel Cleaner—AC, AC Spark Plug Co.; Gas, Gascolator; Ste, Stewart-Warner; Ti, Tillotson; V-S, Van Sicklen.

Carburetor—Sch, Wheeler Schebler; Zen, Zenith; Mar, Marvel; Car, Carter; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson.

Air Cleaner—AC, AC Spark Plug Company; AM, Air Maze; Han, Handy; Un, United; Til, Tillotson.

Front End Drive—Link, Link Belt; Tex, Texolite; Cel, Celeron; Diam, Diamond Chain; Morse, Morse Chain Company; Var, various makes of chains; Var-G, various makes of gears.

Ignition, Generator and Starter—Aut-L, Auto-Lite; Del-R, Delco-Remy; Dyn, Owen-Dyneto Corp.; N E, North East. *Nash.—Indicates twin ignition. *Bendix starter used.

Clutch—Borg, Borg & Beck; Br-L, Brown-Lipe; Rock, Rockford Machine; Long, Long Clutch Company; Rus, Russell Mfg. Co.

Transmission Make—D, Detroit Gear; WG, Warner Gear Company; M, Muncie Gear Company; O, Own; N, New Process Gear Corp.; W, Warner Corp.

*Franklin Transcontinent models are equipped with both Warner and Detroit 3 or 4 speed gear sets, according to body type.

Transmission Type—DG, Detroit Gear & Machine Co; LGS, The LGS Corp.; F, Free Wheeling; SM, Synchro Mesh; BW, Borg-Warner; NP—New Process Gear Corp.; WG—Warner Gear Co.

Universals—U, Detroit Universal Products; S, Spicer Mfg. Corp.; O, Own; M, Mechanics Universal Joint Company.

Rear Axle—Col, Columbia; Sal, Salisbury; Spic, Spicer Mfg. Corp.; Tim, Timken; N.P., New Process Gear Corp.; ½-Semi-floating; ¾-¾ floating; F-Full floating.

Ratio—Optional on the Auburn. *On Pierce Arrow 43, 137 in W. B. rear axle ratio is 4.42. On model 41 rear axle ratio is 4.42. On model 42 ratio is 4.23.

†The axle ratio varies with body types on Franklin models.

Brakes—H, hydraulic; M, mechanical; SD, steeldraulic; Bendix, Bendix Brake Corp.

Steering Gear—Gem, Gemmer; Ross, Ross Gear and Tool Company; Sag, Saginaw; Say-B, Saylor-Beall Manufacturing Company; War, Warner; N.P., New Process Gear Corp.

Rear Springs—S, semi-elliptic; El, full elliptic; Cant, semi-cantilever; S-Tr, semi-transverse. *Rear spring length on Willys, 6-98D is 51 in.

Spring Shackles—Tryon, Willys-Morrow Company; Rub B, Rubber Shock Insulator Company; Faf, Fafnir Bearing Company; ERS, Eaton Rubber Bush- *Tryon, front. ERS, rear. †Own, front ERS, rear.

Chassis Lubricator—Alem, Alemite; Al-Z, Alemite Zerk; Bijur, Bijur Lubricating Corp.; Far, Farval.

P. L. MAURY HEADS THE ARCO COMPANY

Cleveland, Dec. 18.—The Arco Company, manufacturer of paints, varnishes, enamels and lacquers, with general offices at Cleveland and plants in Cleveland, Los Angeles and Toronto, announces the appointment of Philip L. Maury as president. S. D. Wise, president, and S. D. Weil, vice-president, are retiring.

The new president formerly lived in Cleveland, when he was connected with the Sherwin-Williams Company as manager of general industrial railway and marine sales.

NOTICE

Please see the fifth column to the left of this advertisement giving steering gear information. Notice the outstanding Ross predominance. The actual figures are:

ROSS

38

FIRST Competitor

15

SECOND Competitor

12

THIRD Competitor

4

Build Their Own

9

ROSS CAM AND LEVER steering gears predominate not only in passenger car field, but in truck and bus fields as well.

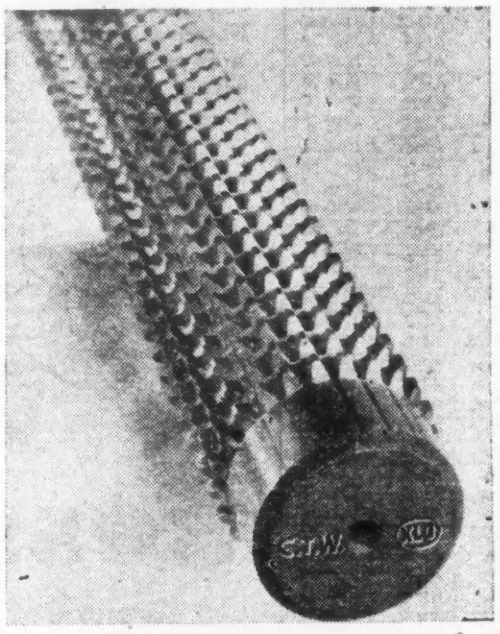
ROSS GEAR & TOOL CO.
Lafayette, Indiana

ROSS
Cam & Lever
Steering

There is only one CAM & LEVER *Steering Gear*

Production -- Engineering -- Factory

Ex-Cell-O Offers New Broach for Internal Gears



The Ex-Cell-O Aircraft and Tool Corporation, Detroit, Mich., is manufacturing a new type of broach, embodying the involute tooth form which is used for broaching internal gears.

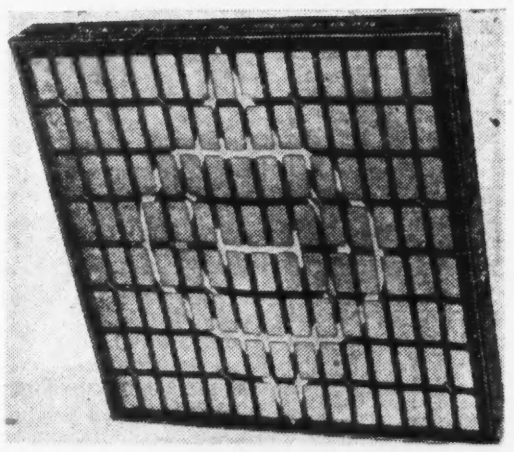
It is stated that, with this broach, the gear is finished in one pass of the broach. No additional operations are necessary, such as grinding or boring.

The broaches start from a drilled hole. The teeth in each row must be absolutely straight to insure high accuracy and finish. The section at the pull end of the broach is designed for sizing the hole and the remainder of the broach for broaching the form on each tooth. A range of diameters, with a corresponding range in number of teeth, can be furnished.

The limits on these broaches were held to .0002 inch on the splines, outside diameter to .0001 inch and the accumulated error in the spacing of the teeth not to exceed .0002 inch. The first section removes approximately .045 inch stock. The pull end is designed for an automatic coupling, which simplifies and speeds up the handling of the broach during the broaching operation.

No broaching fixtures were required for this job, as a soft steel reducing bushing supports the part during the operation, which is performed on a horizontal type of machine.

Owens-Illinois Describes Its New Glass Wool Filter



The Owens-Illinois Glass Company, Toledo, O., is making public the details of its new air-filtering device employing glass wool as the filtering unit. That the company would put out this device was announced some time ago in Automotive Daily News.

The Owens-Illinois filter will bear the trade name of Dustop. The device is simple in design and construction. The price is stated to be so low that replacement of the whole unit is feasible when the filter has become dirty.

The container of the filtering unit is of paper, which makes for lightness. The unit weighs two pounds and is claimed to absorb more than its own weight of dust. The flexibility of the paper container makes a seal between the filter and the metal frame into which it fits, thus preventing the passage of any unfiltered air around the unit.

With a view to economy, the filter has been designed two inches in thickness, so that when a standard four-inch pack is established by using two units in tandem or facing it is only necessary to change one-half the thickness of the total pack at one time. The filter is claimed to be of unusually low resistance. It is stated that two units in tandem will remove 99 per cent of the dust from the air.

CAMDEN EMPLOYMENT ABOVE LEVEL OF 1928

Camden, N. J., Dec. 18.—Camden's industries are employing more persons now than in 1928, according to Loyal D. Odhner, secretary of the Camden Chamber of Commerce.

"The leather and textile industries have more employees. The New York Shipbuilding Corporation has more than 2,800 more employees, and the R-C-A Victor Corporation is employing more persons this year than three years ago. We have just completed a very accurate survey of the situation, and I am speaking from facts," Odhner continued.

CAST IRON LINERS IN MOTOR WHEEL CENTRIFUSE DRUMS

(Continued From Page 1)

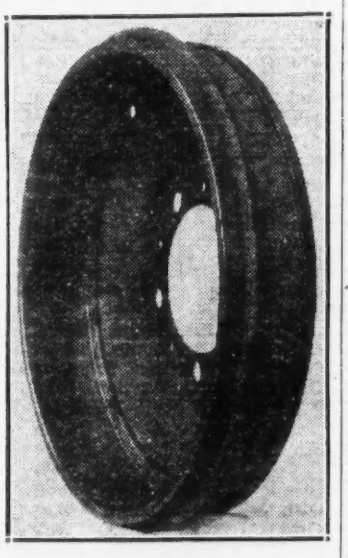
drum, "tailor-made" for the particular braking requirements of each

car, and incorporating three parts—a steel foundation ring, an iron braking ring fusion-bonded to the steel ring, and the steel back.

Originators of the "Centrifuse" point out that recent trends in passenger car design show a variety of advancements that have doubled and trebled the work of the brakes. There is a decided movement toward the use of larger and heavier cars, and increased traffic congestion, greater speeds, higher power and free wheeling have overtaxed the brakes with much additional work and responsibility.

The outstanding difference of the "Centrifuse" drum, according to the makers, is that it provides a braking surface of cast iron, which is employed in a construction that makes the drum heat-dissipating to a high degree, self-truing, noiseless, capable of maintaining a long-service life.

Reboring is unnecessary with "Centrifuse" drums. Even if the

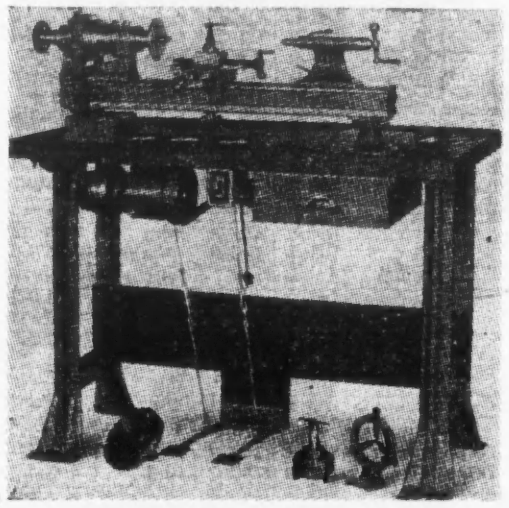


drum should become grooved through accidental entry of grit or through lining rivets that scrape the drum new lining alone will smooth the drum automatically, without even temporary loss of braking efficiency.

Another of the factors distinguishing the "Centrifuse" drum is the rapidity with which it rids itself of the heat generated in braking. The relatively heavy body of iron that forms the friction surface acts as a reservoir throughout which the heat is distributed, it is claimed. Additional heat of prolonged brake application is quickly dissipated through the welded-on back of the three-element drum.

A drum with the characteristics of the "Centrifuse" is not subject to wide expansion and distortion. No existing mechanism has to be changed for the installation of "Centrifuse" drums on new cars, or in the replacement of pressed-steel drums in service work.

B. C. Ames Co. Presents 2-Speed Reduction Unit



B. C. Ames Co., Waltham, Mass., is placing on the market a two-way reduction unit for bench machines. This device embodies gears and clutches and is operated with a lever or treadle for the foot, supplying individual drive for small lathes, milling machines, drills and similar equipment. The motor and switch are reversed to reverse the unit. The machine eliminates countershafts, jackshafts and belting. It is claimed to be quiet in operation, light in weight, powerful, compact and free from vibration. It shifts from one speed to another while in motion or idle.

This reduction unit may be attached to the bench, to the wall or placed on the ceiling and consumes only a small area. The driving and driven pulleys may be placed on either side and only one belt is needed from the gear drive to the machine. Only one belt, flat or V-type, or chain is needed from the gear drive to the motor.

The case is made up of two cast iron sections with bronze mounting lugs to obviate breakage. Of the four stub-tooth helical gears two are Textolite and two are steel. A separate multi-disc clutch with hardened and ground plates is fitted for each speed. Oversize bearings are used and run in a bath of oil.

NEW STEAM BUS TO BE MADE BY NEW CORPORATION

New York, Dec. 18.—With the statement that the age of super-steam equipment is dawning for the automobile, railroad, steamship, and even the aviation industry, and that a large proportion of the automobiles of the immediate future will be of distinctively new design, the Steam Power Corporation of America has been founded and offices have been opened in the Chanin Building. Its first work is the introduction of a new steam motor, on which there has been seven years' research, years of trial on a bus especially equipped, and the expenditure of $1,500,000.

L. E. Rightmyer, formerly of the General Electric Company, division of electrification of steam railroads and division of bus transportation, is president of the new organization. G. A. Frantz, president of the Rawl Corporation, Baker Motor, Inc., and Steam Appliance Corporation, and trustee of the Webb Engineering Corporation, is treasurer. The vice-president and secretary is A. N. Clifton, vice-president of the Rawl Corporation and formerly general sales manager of the Alden Manufacturing Company. They also serve as directors, together with Louis Severy of Ogren & Severy, attorneys. Mr. Rightmyer is production engineer, and the technical staff also includes L. H. Wimmer, M. E., from Poly-Technicum, Arnstadt, Germany; W. E. Baker, chief designing engineer of Baker Motors, Inc., and C. R. Uebelmesser.

It is the purpose of the Steam Power Corporation of America to manufacture, in plants located in Long Island City, Erie, Pa., and Cleveland, steam power units for automotive, marine, aeronautical and industrial use, under "many patents that embody new and revolutionary principles in steam power generation," with present concentration on a "steam bus."

This "steam bus" is said to have no transmission, the power being applied from the boiler to the engine and thence directly to the rear, and, unlike previous installations, condenses its steam and uses it over and over again.

THE CARVAC CLEANER USES GASES FROM THE EXHAUST

The Pootatuck Manufacturing Company, Stratford, Conn., is offering a new model of its Carvac automobile vacuum cleaner. This device is connected with the exhaust pipe by a bushing permanently located at the end ow the pipe. The exhaust gases, by an ejector action, induce a powerful blast through the suction tube. The cleaning tool is a light metal casting with a big opening. Fifteen feet of ordinary vacuum cleaner hose completes the outfit, which weighs only ten pounds. Dirt of any sort collected is ejected from the exhaust. The Carvac is priced at $7.50.

BARBER-COLMAN MARKETS MIDGET ELECTRIC MOTOR

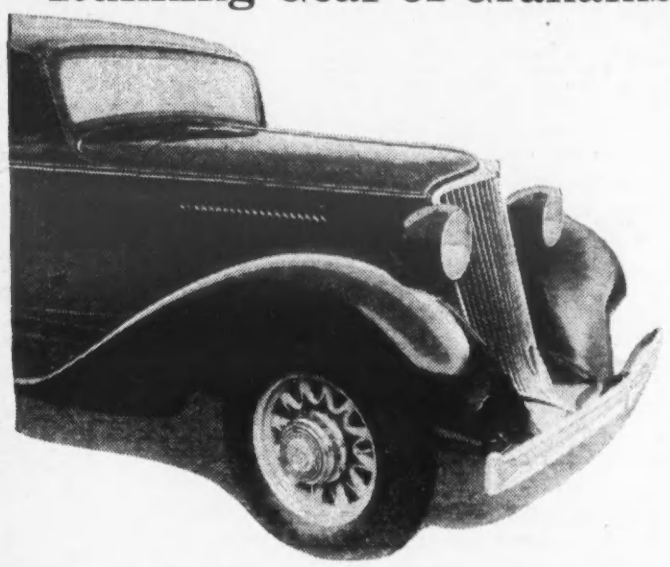
The Barber - Colman Company, Rockford, Ill., is placing on the market a small fractional horse power electric motor that can be held in the palm of the hand. It can be used on electric fans, heat regulators, etc., where a high starting torque and small size are required. The principal advantage claimed for this motor is a high power for the diminutive size.

The motor is constructed of steel laminations, brass bearing plates with oilless bearings and squirrel-cage rotor mounted on a hardened shaft. All coils are wound on phenolic resin spools and are impregnated to exclude moisture and insure good insulation. The motor is made for any voltage between 10 and 230 and for alternating current frequencies from 25 to 60 cycles. Special two-speed models can be furnished.

CHANGE OF NAME

Richmond, Va., Dec. 18 (UTPS).—An amendment to the charter of the Pennsylvania-Virginia General Transit Company of Alexandria, Va., changes its name to Pennsylvania Greyhound Lines of Virginia, Inc. F. J. Fell, Jr., is vice-president. George J. Adams of Philadelphia obtained the amendment.

Air Curve Fenders Inclose Running Gear of Grahams



THE NOVEL TREATMENT of the front end of the new Graham eights is designed to cut down wind resistance, and includes a unique air foil fender design. The aerodynamic features have been carefully worked into artistic designs

(Continued from Page 8)

construction that, besides absorbing minute vibrations, eliminates the need for lubrication and frequent adjustment. Anti-friction material is used between the chassis and body and wherever the sheet metal is attached to the body or chassis.

The body itself is insulated. The interior surface of the metal panels is thickly coated with a sound-deadening material. Two dovetails are used on each door, the extra one being at the top.

In the construction of the body frame work, which has been redesigned with improvements made possible by the flat-platform chassis frame, rubber dough and sound-deadening material are used wherever there is a possibility of friction.

An innovation is the means taken to give accessibility to the interior structure of the body. The door-header panels, inclosing the door openings, are detachable channel sections of steel, held in place with bolts. When these panels are removed, the electric wiring, windshield wiper tubing and body framework bolts may be reached.

Another interesting feature is the means of attaching the trim panels on the inside of the doors. Instead of being nailed in place, they are held by a large number of spring clips. A panel may be removed in a minute by inserting a screwdriver under the edge of the trim and prying the clips out of their sockets in the metal of the door. This gives quick access to the window lifts, glass and glass channels.

The entire front end unit of the body is welded in a single piece. The doors are all metal. The door pillars are of steel, with box section.

The interior of the car has been improved by the new windshield header construction. The windshield hinges, which permit the windshield to be swung outward, are totally concealed inside the header, which also hides the mechanisms of the two windshield cleaners. The shafts of the windshield cleaners project through the forward curved roof panel instead of through the windshield frame to give a waterpoor construction. The windshield is regulated by a central toggle control.

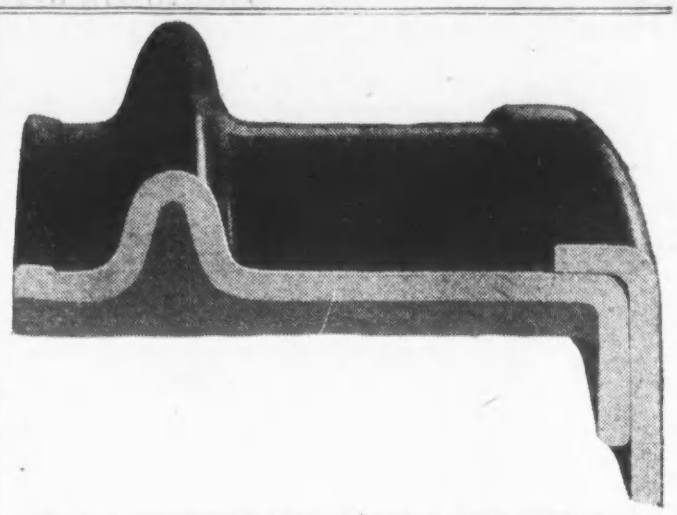
Two adjustable sun visors are mounted on the underneath surface of the wind shield header. They are so arranged as not to block the driver's vision in the rear-view mirror.

A new instrument board groups the instruments in a central framed panel. In the center is a large pointer type speedometer. Another round dial on each side incloses the other indicators, two in each. They are the oil pressure gauge, water temperature indicator, ammeter and gasoline gauge. Each dial is covered with a convex crystal. The illumination of the dials is by indirect lighting, but the gasoline gauge and the water temperature indicator are made especially visible by light reflected through them.

Push-pull controls under the dials regulate the shock absorber, free wheeling, choke throttle and manifold heat regulator. There are two cowl ventilators.

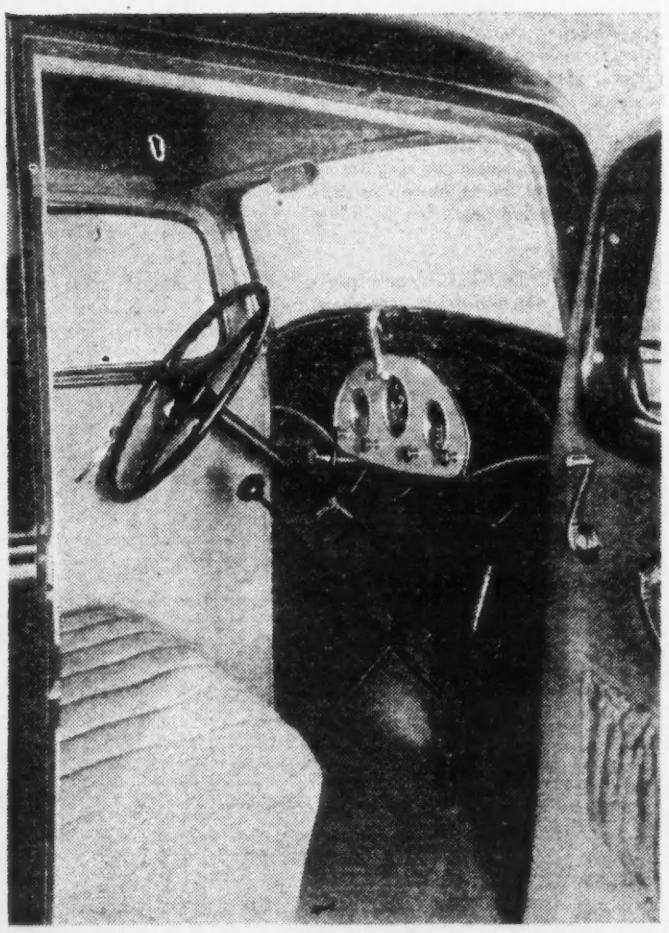
The front seat is adjustable fore and aft, and the rear seat may be placed in either of two positions. The clutch and brake pedals also are adjustable. The pedals and the treadle type accelerator are rubber covered.

All doors may be locked from the inside of the car, but it is impossible for the driver to lock himself out of the car without using the key. Incidentally, a single key fits the steering-ignition lock, the door lock and the spare tire locks. While both front doors may be locked from the inside without a key, opening either door to leave the car automatically unlocks it. If the lock be set while the door is open, closing the door leaves it unlocked.



THE NEW CENTRIFUSE brake drums of the Graham line are built up of the outer steel ring, flanged and ribbed, into which is centrifugally cast the inner thickness of cast iron. The steel and iron ring is then welded to the back, which is bolted to the wheel in the usual way

Concealed window shades and rollers are used in the rear quarter windows. The rollers are contained in the lower garnish moldings, and the fabric of the shade runs through a narrow slit in the molding.



THE INTERIOR of the front compartment of the new eight is exceptionally roomy. Instruments are conveniently grouped and easily read. Spark, throttle, choke, free-wheeling, shock absorbers and carburetor heat units are operated by push-pull controls

Facts Easily Given
•
Easily Understood
•
Easily Shown

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